ENGINEERING NEWS-RECORD

Thawing out—the St. Lawrence push is on p. 23

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There's little doubt about the highly corrosive action of steam condensate on piping material. The big question is, "Which piping material will last the longest?" Our Engineering Service Department knew the answer a long time ago—Wrought Iron Pipe—and have been confirming the fact ever since with detailed service records, kept up-to-date with accurate, regular field reports. Our files are bulging with these case histories—important to you because they provide actual proof of wrought iron pipe's durability and economy in steam condensate line applications.

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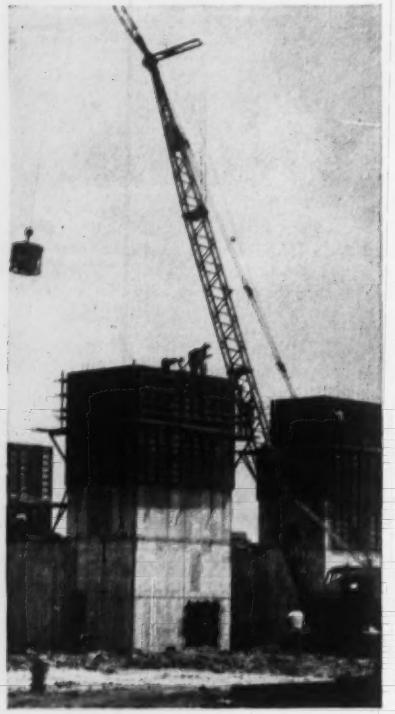

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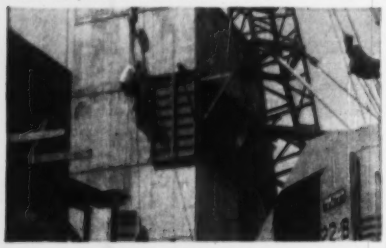
In this unusual stripping procedure, panels are being removed by a worker seated in a bosun's chair suspended from a crane boom.



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ENGINEERING NEWS-RECORD Vol. 156, No. 14 April 5, 1956

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. **Executive, Editorial, Advertising and Subscription Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Publication Office, 99-129 North Broadway, Albany 1, N. Y. Donald C. McGraw, President; Paul Montgomery, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Joseph H. Allen, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Circulation Director. **SUBSCRIPTIONS:** Address correspondence to Engineering News-Record—Subscription Service, 99-129 North Broadway, Albany 1, N. Y., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address. Subscriptions are solicited only from persons with an identifiable commercial or professional interest in construction and building. **Position and company connection must be indicated on subscription orders.** Single copies 35¢. Subscription rates—United States and possessions, $6.00 a year; $9.00 for two years; $12.00 for three years. Canada $8.00 a year; $12.00 for two years; $16.00 for three years. Other Western Hemisphere and the Philippines, $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries $20.00 a year; $30.00 for two years; $40.00 for three years. Second class mail privileges authorized at Albany, New York. Printed in U. S. A.

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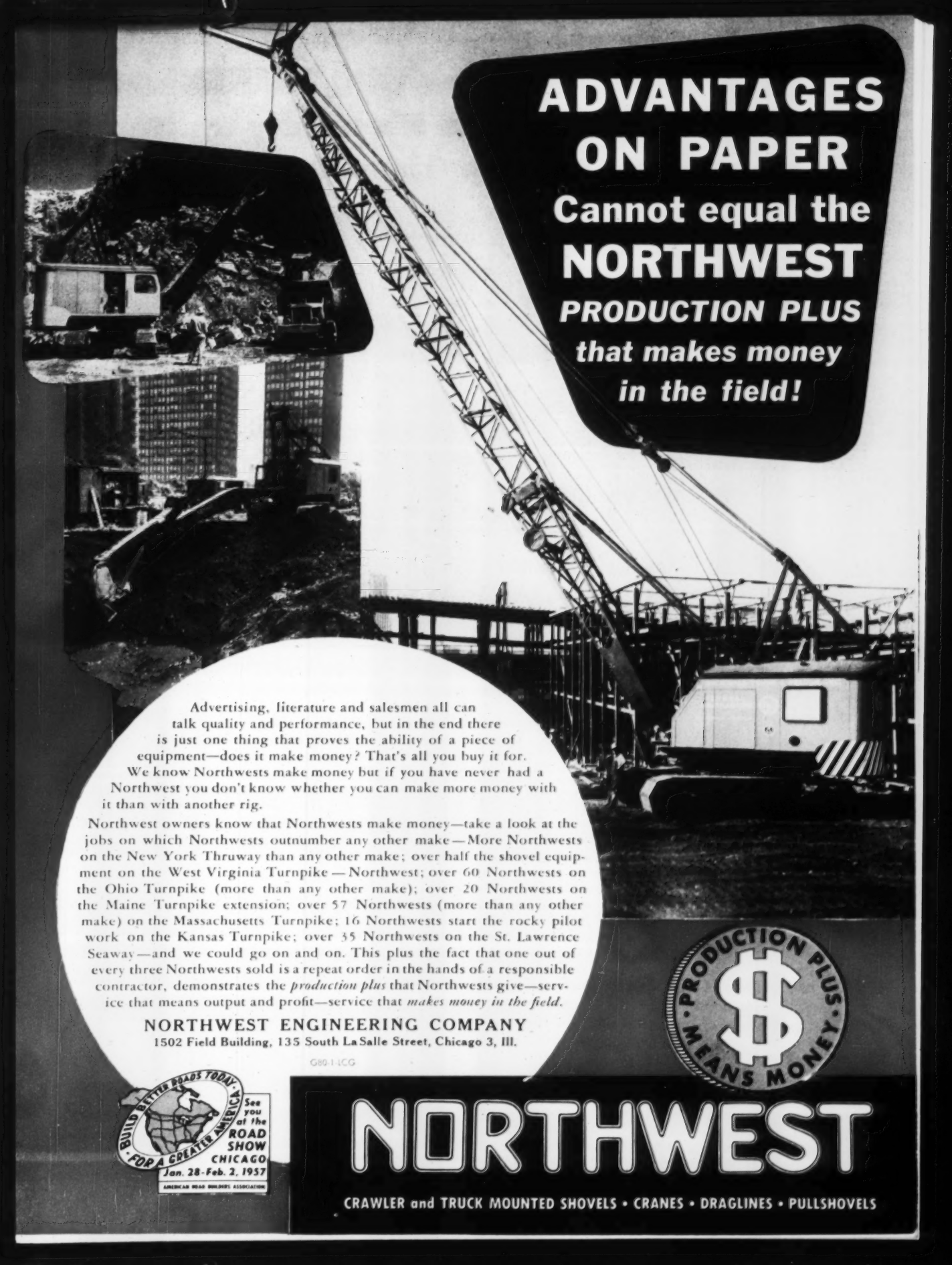

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These racks will carry power lines and utility cables to a supersonic wind tunnel of the Lewis Flight Propulsion Laboratory. Repairing line breaks, which could shut down an extremely important research project, will be an easy job. A man will walk right up to the trouble zone and go to work.

American Vitrified Products Company supplied several thousand feet of special order 78-inch concrete pipe for this project. Galvanized inserts were welded to the reinforcing steel in the pipe. Supporting brackets holding the cable racks are then bolted to the inserts.

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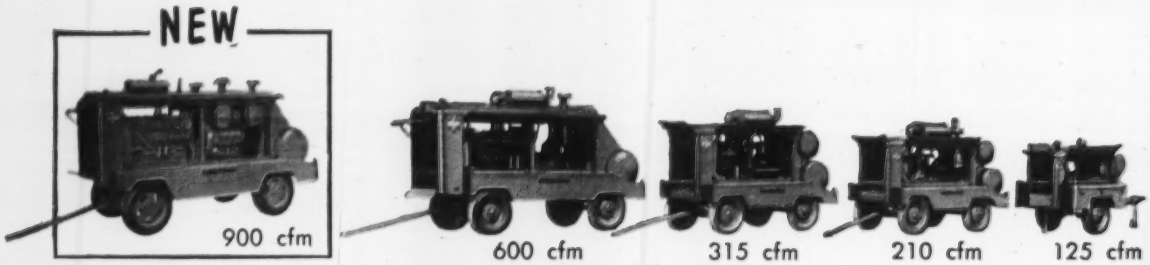

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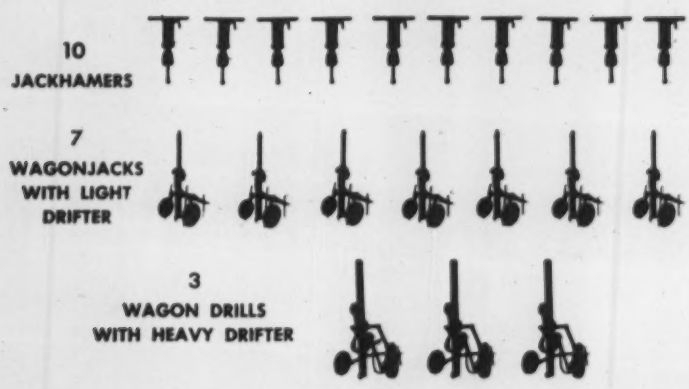

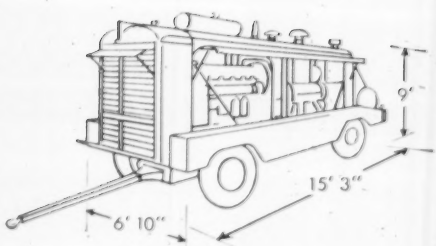

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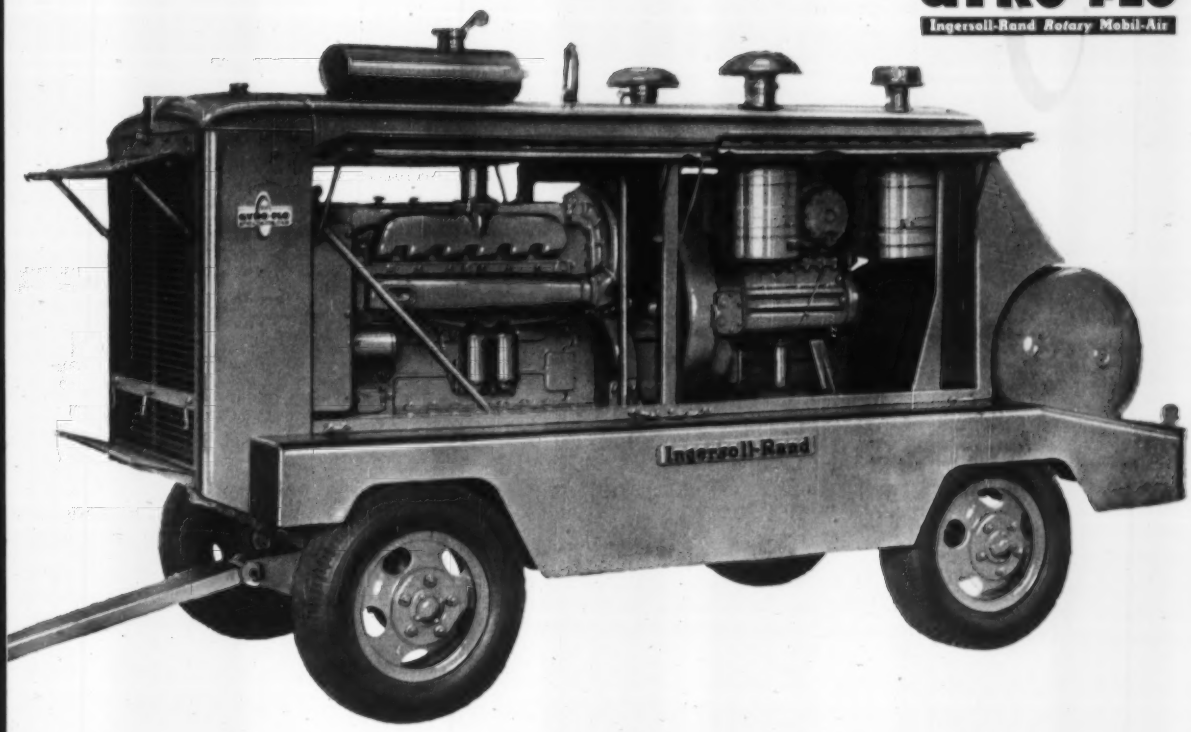

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Reader Comment

Do-It-Yourself?

SIR — ENGINEERING NEWS-RECORD'S report, on the recent AHONAS meeting in Boston, attributed statements to Mr. Burl A. Wilder, of the Savin Construction Corporation, that have probably raised a bushel of eyebrows. Mr. Wilder's advice to state highway officials included a recommendation to adopt a "do-it-yourself" policy on design and decrease the use of consultants. I shudder to think of the reaction of contractors, if a similar recommendation were made by a consultant, pertaining to more construction by the various highway departments' own forces, accompanied by a decrease in the use of contractors.

A further complaint of Mr. Wilder's referred to "bickering" among consultants. The writer's company has designed and supervised construction of many miles of many turnpikes and expressways, including projects where construction contracts overlapped. Bickering? Oh brother!

Hoping to avoid further expansion of the "do-it-yourself" theme, I recommend that more roads are built by topnotch contractors like the Savin Construction Corporation—one of the best in the business.

FRANK J. WILLIAMS
Chief of the Highway Section
Gannett, Fleming Corddry
& Carpenter
Harrisburg, Penna.

Inclined Bars Cause Cracks

SIR—Exception is taken to the conclusion of consultants to the Corps of Engineers as stated in ENR, Jan. 12, p. 21 . . . "failures of reinforced concrete rigid frames in recently built Air Force warehouses could be caused by a combination of conditions, none of such character as to be the sole cause." Additional exceptions are taken to the recommended method of repair, and to the implied criticism of the American Concrete Institute code.

We are taking this position because of a personal experience eight years ago on a rigid-frame structure of similar type and span, not of our design, located near Wilmington, Del. We were consulted by the general contractor as to what could be done about severe cracks in the concrete immediately above the main tension steel. These cracks were from one-half to one inch in width, four feet long, and centered horizontally about the center line of span.

After considering and discarding several possibilities, none of which seemed of the required magnitude of force or direction to account for the cracks, we concluded that the only force of the right order was the component of the stress in the main tension steel that came into play because of a change in direction of the steel at the center line of the span. Hence, the contractor was instructed to chip vertical channels in the concrete at designated points within the center six feet of the span, to weld heavy rods to the top and bottom steel at these points, and to complete the job by filling the channels and cracks with gunite. Since then, the rigid frames have exhibited no new cracks.

From our experience at Wilmington, we may logically conclude as follows, bearing in mind that in the rigid frames in the Air Force warehouses a change in direction of the main tension steel occurs at the quarter points:

1. Frozen joints, volumetric changes, or changes in points of inflection, taken singly, or in combination, are of inadequate magnitude and direction to account for the initial serious cracks, within the concept of conventional factors of safety.

2. The component of the stress in the main tensile steel at the point where the steel changes direction is of the correct order of magnitude and direction to account for the cracks.

3. Cracks of this type are likely to occur at any point in the span at which a change in direction of the main tensile steel occurs, unless specific steps are taken to nullify excessive tension in the concrete at that point.

4. All points at which principal lines of reinforcement change direction are potential danger points, even where the resultant is not pure tension.

5. Repairs to the Air Force rigid frames, using rods of adequate diameter and spacing, and installed locally about the critical points, will restore the frames to serviceable condition.

6. The American Concrete Institute building code cannot be blamed for either the Wilmington or the Air Force failures, unless we also stipulate that the code control the geometry of structures. In both cases, the designer used a geometrical shape that caused excessive stress at a point, and then failed to provide for this local critical condition.

7. If the suggested revisions—Sec. 801e—of the ACI code are actuated only by the Air Force failures, then in our opinion the need for the revisions has not been demonstrated.

JACOB J. CRESKOFF
President
Thermo-Fluid Corp.
Philadelphia, Pa.

Engineering News Record welcomes expression of opinion from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance.

Letters should be addressed: Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Alternates Not Desirable

SIR—In spite of all that has been written in recent years about prestressed concrete bridges, there is an abysmal lack of reliable competitive cost data between prestressed concrete and other media of construction.

There is a reason for this. Until 1954, in most cases where prestressed concrete designs have been selected, the owner issued detailed designs and specifications only for a structural steel *or reinforced concrete structures*. A clause permitting the bidders to submit an alternate design in prestressed concrete was generally added as a reluctant afterthought.

Each bidder then had to employ one of several firms specializing in prestressed concrete design to prepare the alternate design and supporting data. Each bidder included this cost in his bid, and because of this speculative investment added a higher profit factor to the prestressed estimate than for the official design in which he had no design investment. The usual result was that the bid for the prestressed design was not directly related to the cost but was arrived at by merely shading what the bidder thought would be the lowest possible bid for the published design. In these circumstances, no true comparison of cost could be made.

Since 1954, this procedure has been changing. A number of state, federal and municipal agencies are now showing complete designs and specifications, so as to receive competitive bids for prestressed concrete and conventional construction. In many instances, this free competition has revealed a great economy in favor of prestressed concrete. This can be seen from the contract prices for pre-

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Next time you're in the market for steel or steel products, it'll pay you to contact CF&I.

3490

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THE NEW UNIT Challenger ...with CLAMSHELL

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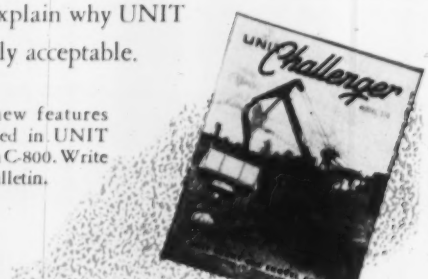
because UNIT's advanced design gives you **Self-Aligning, Replaceable Hook Shoes . . . Straight-in-line Engine Mounting with Torque Converter . . . Hydraulic Actuated Clutches . . . Modern Transmission with Involute Splines . . . One Piece Cast Gear Case . . . Alloy Steels and Forgings . . . Force Feed Lubrication** and many other UNIT advantages. These life-prolonging features are contributing substantially to the performance and efficiency of each machine. And they explain why UNIT equipment is so universally acceptable.

See the many other new features illustrated and described in UNIT CHALLENGER Bulletin C-800. Write for your copy of this bulletin.



UNIT CRANE & SHOVEL CORP.
6315 W. Burnham St. • Milwaukee 14, Wis., U.S.A.

Geared to boost your earnings!

A8502-3/4PC

. . . Reader Comment

stressed concrete bridges published in ENR Feb. 16.

It is noteworthy that out of a total of ten bids received for the Manatee River and Palma Sola bridges, eight were for prestressed concrete, two for structural steel and none for cast-in-place or precast reinforced concrete construction. This certainly refutes the stand taken by many government authorities against the use of prestressed concrete designs for important bridges for fear of not obtaining adequate competition from reliable bridge builders.

The bidding record for these ten major bridges speaks for itself. It should convince public authorities that substantial economies can be achieved with sound prestressed concrete bridge design and that it is no longer necessary, for fear of inadequate competition, to consider prestressed concrete only when it can be put in competition with structural steel or reinforced concrete.

The time has come when prestressed concrete, well suited to our climate and economy, must be regarded as an equal contender with the older methods of construction for major bridges. When preliminary studies indicate that prestressed concrete is a logical and economical solution for a particular bridge, it should be selected on its merits, without the cumbersome and costly procedure of making alternate designs in other construction media.

In the forthcoming expansion in our national highway system, prestressed concrete bridges will produce substantial savings in cost and time of construction if those in charge of the program will award separate contracts for bridge design to consulting firms specializing in this new field of design.

CURZON DOBELL
President
The Preload Co., Inc.
New York, N. Y.

Long Cable Is Outstretched

SIR—Several people in this office have commented on your article, "World's Longest Cable Spans 12,000 Ft" (ENR Feb. 23, p. 56), after reading in the March issue of our house organ of a 16,000-ft transmission line spanning Sognefjord in Norway. Four 60-kv lines cross a deep fjord with mountains on either side. Dead-end towers, one at each end of each line, are concrete A-frame structures 30 ft high that are founded in good rock.

Thus it appears that your Italy-to-Sicily crossing will have to settle for second place insofar as length is con-

cerned, but I am sure it deserves a first place award for size and weight of towers.

H. A. Blocki
Ohio Brass Co.
Mansfield, Ohio

Sir—Compare your article ("World's Longest Cable Spans 12,000 Ft," ENR Feb. 23, p. 56) with enclosed advertisement, also claiming to be world's largest cable span, 4,890 meters, which is approximately 16,000 ft.

H. R. Jorgensen
Civil Engineer
Winnipeg, Manitoba

[Editor's Note—As described in an advertisement in an Oslo periodical, the 16,000-ft span stretches across a Norwegian fjord, linking elevations of 2,560 ft and 1,575 ft above water level. At the point of maximum sag, the cables clear the water by only 197 ft.]

Correction

The address given in "New Products" (ENR Mar. 22, p. 51) for the True Gun-All Equipment Corp. was in error. The correct address is: Midstates Building, Tulsa, Oklahoma.

CALENDAR

Western Association State Highway Officials Conference, Phoenix, Ariz., April 10, 11, 12, 13.

Construction Specifications Institute, ninth annual meeting, Architectural League, New York, N. Y., April 19.

American Water Works Association, Diamond Jubilee Conference, Kiel Auditorium, St. Louis, Mo., May 6-11.

Society of American Military Engineers, 36th annual meeting, Washington, D. C., May 14-15.

Purdue Industrial Waste Conference, Purdue Memorial Union, Lafayette, Ind., May 15-17.

American Institute of Architects, annual convention, Biltmore Hotel, Los Angeles, Calif., May 15-18.

Prestressed Concrete Institute, second annual convention, Hollywood Beach Hotel, Hollywood, Fla., May 16-18.

Society for Experimental Stress Analysis, spring meeting, William Penn Hotel, Pittsburgh, Pa., May 16-18.

Building Research Institute, annual meeting, Sheraton-Brock Hotel, Niagara Falls, Ont., May 21-22.

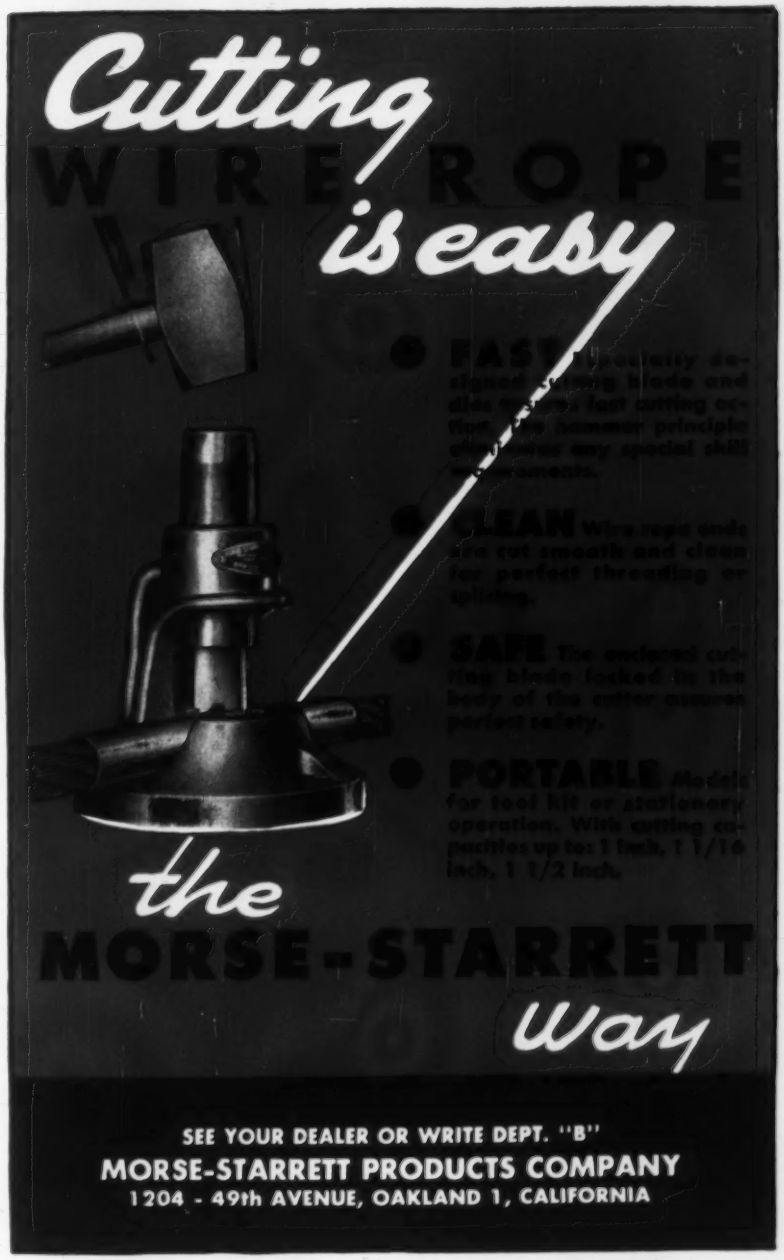
National Society of Professional Engineers, Ambassador Hotel, Atlantic City, N. J., May 23-26.

Concrete Reinforcing Steel Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., May 28-June 2.

American Society of Civil Engineers, Spring convention, University of Tennessee, Knoxville, Tenn., June 4-8.

Materials Handling Exposition, Cleveland, Ohio, June 5-8.

World Conference on Earthquake Engineering, University of California, Berkeley, June 12-16.



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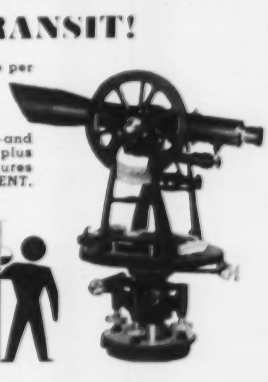
There are many big reasons why you get greater value per dollar with Warren-Knight Transits and Levels. These many exclusive features of design and construction result in unexcelled accuracy—time saving ease and convenience in handling—tremendously low maintenance cost—longer instrument life—and great time and money savings in use. All these plus a lower price and direct shipment from the factory assures you THE GREATEST VALUE FOR DOLLAR OF INVESTMENT.



See for yourself. Write for FREE Folder NR-64

WARREN-KNIGHT
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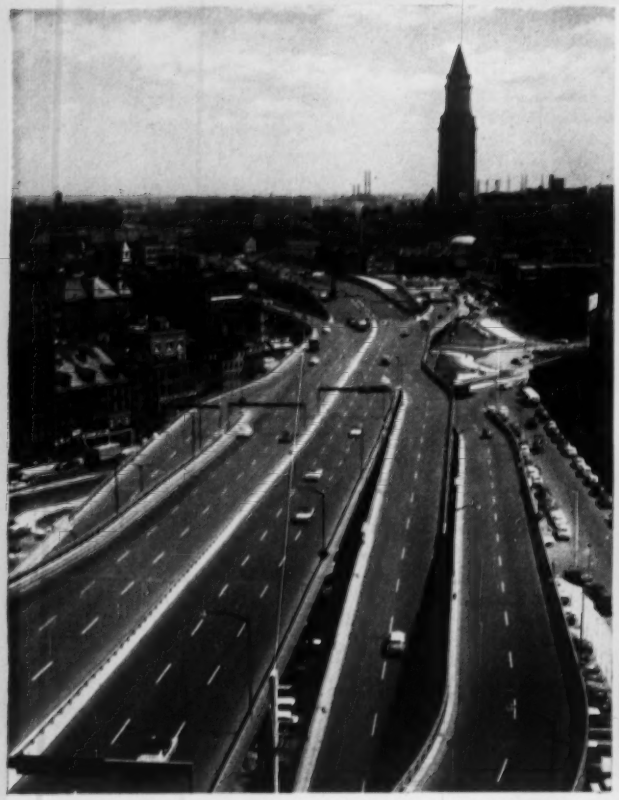
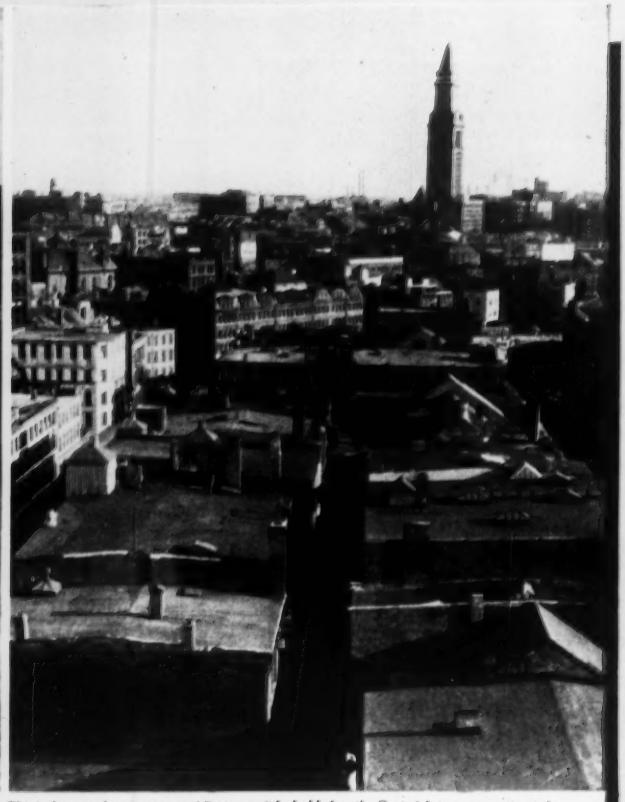
Advertising that STARTS roads...



Boston's new Central Artery, seen from the Mystic River bridge, handles 120,000 vehicles daily.



This is the same downtown area of Boston, as it looked before the Central Artery was constructed.

8 minutes from home... or 40?

Here's how Massachusetts gives Thomas Johnson more time with his family—less time on the road. What's traffic like in your state?

Thomas Johnson works at an office on Washington Street, in the heart of downtown Boston. He lives in Chelsea, five miles away. Before the new Central Artery was built, the trip took 35 to 40 minutes' driving time each way in nerve-wracking traffic. Now he does it easily in eight minutes. He has nearly an hour more at home!

Boston used to be known as the worst traffic bottleneck in America. Old streets, narrow and twisting, plus a huge concentration of industry in a small area, made the Bay State capital a motorist's nightmare. Today, thanks to a farsighted policy of spending state highway funds where they are most needed, Boston is a different city.

It took courage and cash to tear through whole city blocks and build the Central Artery at a cost of $37,000,000 for a single mile. But since 70% of all traffic in the commonwealth originates or has its destination in Boston, voters recognized the vital need and supported the required bond issues. Meanwhile the other 2500 miles of state highways are not being neglected. Massachusetts has spent $285,000,000 for road improvements in the past four years, and even larger outlays are planned for the future.

Good highways *save* more than they *cost*—in time, in lives and in actual cash. They are the lifeblood of business and industry. If you want to know what *you* can do to help the road program in your own state, write today for the free booklet, "Road Block." Just mail a card to Dept. 2, Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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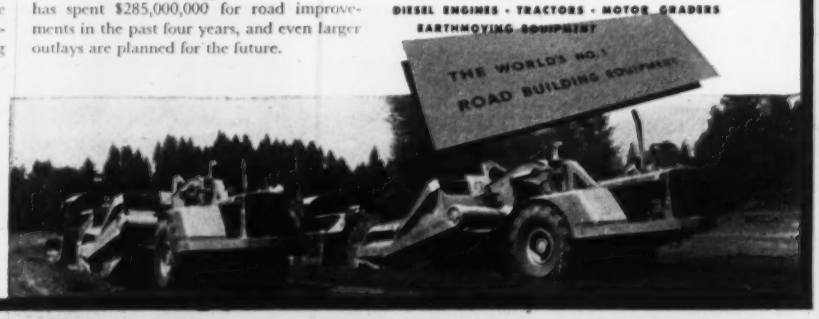
DIESEL ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

Wherever you see Caterpillar machines working on your roads, you can be sure your state is getting its money's worth.



Equipment that BUILDS them

The advertisement on the opposite page appeared in full color in *The Saturday Evening Post*, in February. It is the latest of a series of hard-hitting messages on highway building—the longest and strongest continuous magazine campaign sponsored by any advertiser to promote better roads.

The evidence of hundreds of letters from *Post* readers shows that this advertising *is helping to stir up needed legislation—get roads built—produce construction contracts.*

Caterpillar is creating opportunities for you. And it's matching those opportunities with new and improved equipment to help you increase profits and cut costs. You've seen the results of constant research and development in the past year. Look at the array of modern Caterpillar track-type and wheel Tractors, Traxcavators*, Motor Graders, Engines and Electric Sets – all built to do more work for you, faster and at lower cost!

A good example of Caterpillar leadership is the new CAT* DW21 Tractor (Series C) with its matching No. 470 LOWBOWL Scraper. A 300 HP Caterpillar Engine with Turbocharger gives the tractor increased rimpull. New, big, wide-section tires add to flotation and traction. And there's optional electric or gasoline starting. New LOW-BOWL construction of the scraper permits loading 18 cu. yd. struck or 25 cu. yd. heaped—faster, more easily than old scraper designs. In on-the-job tests these rigs consistently move more earth in faster cycle-times than competitive equipment.

Caterpillar—and your Caterpillar Dealer—are your partners in progress.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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LEADERSHIP IN ACTION

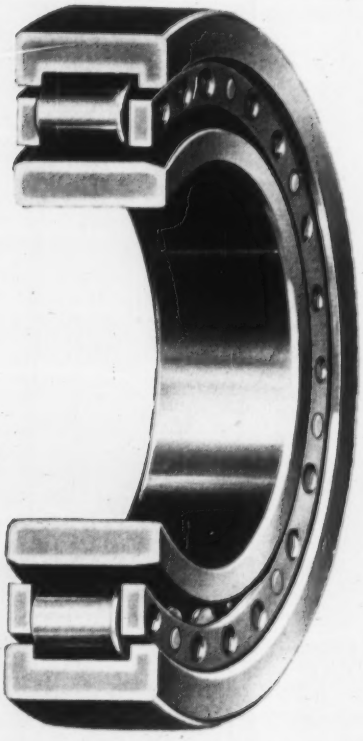
No job too little . . . or none too tough for BOWER STRAIGHT ROLLER BEARINGS

A complete line, a wide range of sizes to fit your specific needs

Square pegs weren't made for round holes. And aircraft bearings aren't built for farm equipment, either. That's why Bower designs a complete line of straight roller bearings—a line broad enough to meet any product requirement.

Jet planes break the sound barrier . . . need bearings that'll keep pace. So Bower aircraft bearings are engineered with exactness and precision to tolerances held to millionths of an inch. Bower tractor bearings, on the other hand, are built for ruggedness . . . to take heavy loads and real punishment, day after day, month after month.

Bower Roller Bearings are proved performers *in every field*, for *any* straight roller bearing application. From motors to earthmoving equipment, they're on the job—cutting maintenance and downtime, setting new standards of efficiency and economy. Get details on the *complete* line from a Bower engineer.



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BOWER ROLLER BEARINGS

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YOU GET MORE OF THE FEATURES YOU NEED MOST in a Bucyrus-Erie Transit Crane

HERE'S PROOF....

Your Bucyrus-Erie distributor can give you plenty more!

FEATURE	MODEL 15-B	MODEL 22-B	HOW YOU BENEFIT
Friction swing brake.	Standard	Standard	Operator can spot and hold boom point over desired position.
Power controlled lowering for main hoist line on lifting crane.	Standard	Standard	Provides high accuracy in lifting or lowering loads.
Independent power boom hoist with power controlled lowering.	Standard	Standard	Boom angle can be changed while machine is swinging or propelling, while load is being hoisted or lowered.
Open-throat boom design.	Standard	Standard	Permits rigging 2, 3, or 4 parts of line without removing sheave guards.
8-part pendant suspension.	Standard	Standard	Ideal for changing boom lengths conveniently and with minimum downtime.
Safety boom stops on all machines equipped for lifting crane service.	Standard	Standard	Added safety. Prevents boom from accidentally snapping over center and striking cab.
Boom angle indicator.	Standard	Standard	Enables operator to determine angle of boom at all times.
Full 3-side vision from operator's cab.	Standard	Standard	Gives him clear view of his entire operating range and of all men or obstructions in the vicinity.
16-part boom suspension.	Optional at extra cost	Optional at extra cost	Provides slower boom hoisting or lowering for even greater precision control.
Boom folding mechanism.	Optional at extra cost	Optional at extra cost	Booms over 60 feet long can be carried folded on job-to-job moves.

BUCYRUS ERIE

BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE, WISCONSIN

126ESSC

JENKINS PRACTICAL PIPING LAYOUTS

77

Code	Quan.	Jenkins Valve	Service
A	1	Fig. 677A Br. Gate	Cold water well shutoff valve
B	2	Fig. 295 Br. Sw. Check	Prevent backflow thru well pumps
C	1	Fig. 677A Br. Gate	Warm water well shutoff valve
D	6	Fig. 368 Br. Gate	Circ. pump shutoff valves
E	1	Fig. 106A Br. Globe	Settling Tank drain valve
F	1	Fig. 368 Br. Gate	Shutoff discharge to warm water well
G	1	Fig. 368 Br. Gate	Control water to evaporator
H	1	Fig. 368 Br. Gate	Control water to condenser
J	1	Fig. 368 Br. Gate	Control water to warm water well
K	1	Fig. 368 Br. Gate	Control water to ch. water pump
L	1	Fig. 106A Br. Globe	Constant head regulator bypass
M	2	Fig. 368 Br. Gate	Constant head regulator shutoff
N	2	Fig. 352 Br. Sw. Ch.	Prevent backflow thru circ. pumps
P	2	Fig. 368 Br. Gate	Ch. water temp. regulator shutoff
R	1	Fig. 106A Br. Globe	Ch. water temp. regulator bypass
S	2	Fig. 368 Br. Gate	Evaporator shutoff
T	1	Fig. 352 Br. Sw. Check	Prevent backflow thru evaporator
U	1	Fig. 368 Br. Gate	Shutoff water to recovery & precon coil
V	1	Fig. 368 Br. Gate	Shutoff discharge to cold water well
W	1	Fig. 368 Br. Gate	Control water to hot water pump
X	1	Fig. 368 Br. Gate	Shutoff water to heating coil
Y	1	Fig. 368 Br. Gate	Control water to hot water pump
Z	1	Fig. 368 Br. Gate	Control water to ch. water pump
AA	1	Fig. 368 Br. Gate	Control water to warm water well
BB	2	Fig. 368 Br. Gate	Condenser shutoff
CC	1	Fig. 47 Br. Gate	Expansion tank shutoff valve
DD	1	Fig. 47 Br. Gate	Expansion tank shutoff valve
EE	1	Fig. 47 Br. Gate	Control makeup to expansion tank
FF	1	Fig. 92 Br. Sw. Check	Prevent backflow to water lines
GG	8	Fig. 106A Br. Globe	Drain valves

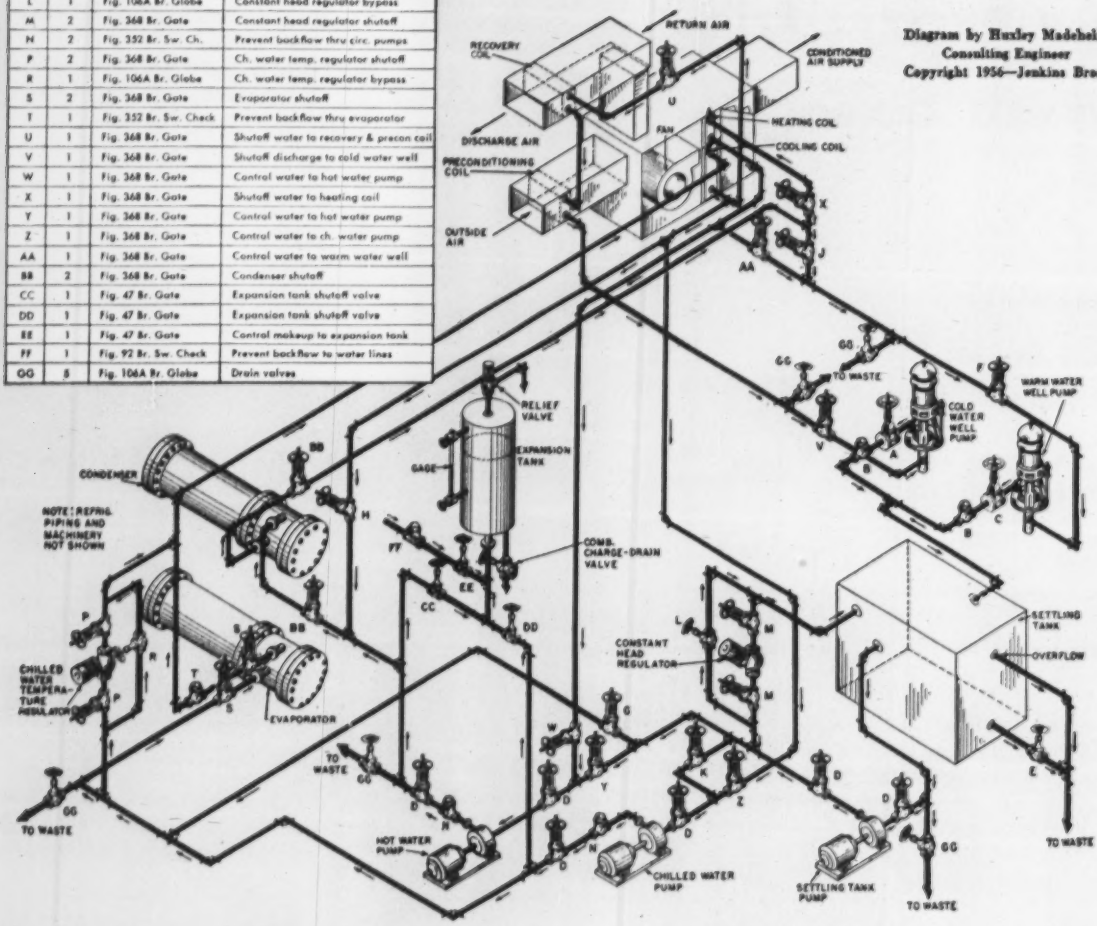

Diagram by Huxley Madeheim
Consulting Engineer
Copyright 1956—Jenkins Bros.

How to plan piping connections for all-year

AIR CONDITIONING WITH THE HEAT PUMP

Well water is used in the basic heat pump installation illustrated. Such a system could readily serve a building with several exterior and interior zones, which would have many air handling units. For simplicity, only one unit is shown in the diagram.

For heating demands, this system provides a closed circuit consisting of hot water pump, condenser, and heating coil. For cooling, a second closed circuit consists of chilled water pump, evaporator, and cooling coil.

During the heating season, water is supplied to the settling tank from the warm water well (about 60° F). It is circulated by the chilled water pump to the evaporator, and then to the cooling coil to provide cooling, where needed, for interior areas. The water then flows to the recovery coil, picks up heat from waste air and carries it to preconditioning coil, where it is used to preheat outside air. The resulting chilled water is discharged to the cold water well.

During the intermediate seasons, water is supplied to the settling tank from the cold water well (about 50° F). It is circulated by the hot water pump to the condenser, and then to the heating coil to provide heat, where needed, for the exterior zones. The water is then discharged to the hot water well.

During the cooling season, water from the cold water well is pumped to the settling tank, and then circulated to the evaporator and the cooling coils. It is next used to cool the condenser, and is then discharged to the hot water well. If the demand for cooling is low, and the well water cold enough, the evaporator may be bypassed.

Consultation with accredited piping engineers and contractors is recommended when planning major piping installations.

Enlarged diagram and full description of this layout free on request. Ask for Layout No. 77. Jenkins Bros., 100 Park Ave., New York 17.

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LOOK FOR THE JENKINS DIAMOND
TRADE JENKINS

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ENGINEERING NEWS-RECORD

Vol. 156, No. 14 April 5, 1956

Number of copies printed this issue: 72,743

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 55¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

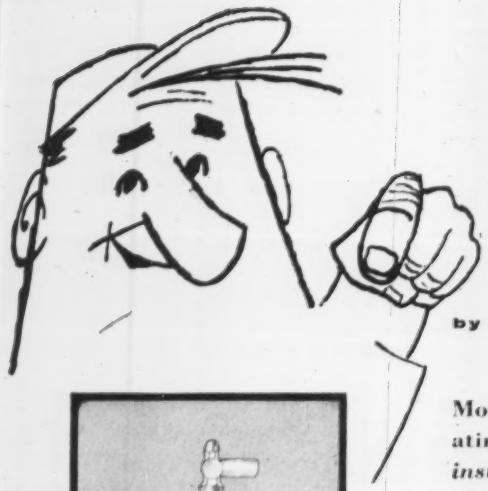
STRUCTURAL STEEL DILEMMA—Structural steel shipments made a big showing for February but bookings piled up at an even faster clip. According to the American Institute of Steel Construction, February shipments totaling 283,379 tons were 33% ahead of the tonnage shipped a year ago and 13% above January. February bookings were 40% above a year ago at 328,597 tons, though they were below January's all-time high. The order backlog is nearly 2,500,000 tons with about half scheduled for fabrication by the end of June. To meet this schedule, fabricators will have to average 300,000 tons in monthly shipments.

RUNWAY SMOOTHNESS STANDARDS—Army Engineers this week hope to finalize a new set of pavement smoothness standards for runways and primary taxiways of Air Force bases. Permitted tolerances will remain at the limits established March 1: Maximums of 0.02 ft (or ¼ in.) plus or minus for rigid pavement and 0.04 ft (or ½ in.) for hot-mix bituminous surfaces. Problem now is to issue specifications for applying these limiting criteria to a stretch of pavement surface.

CHURCH CONSTRUCTION FORGES AHEAD—The American Iron & Steel Institute estimates that 70,000 new churches will be built at a cost of $7 billion within the next 10 years. Expenditures for religious construction—both new edifices and expansions—were a record $760 million in 1955. This year they're expected to reach $900 million.

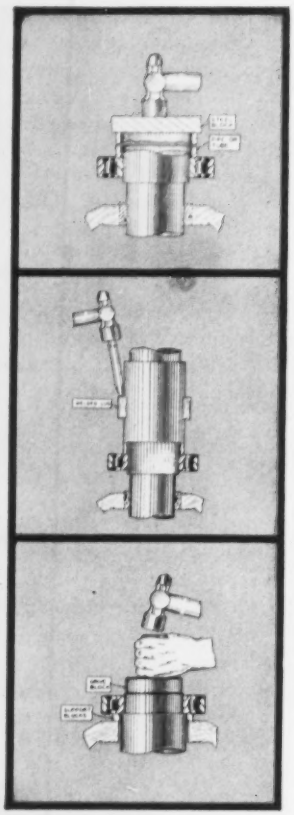
WHERE OIL AND WATER DO MIX—Figuratively at least, California's water and its oil go well together. State legislators have just agreed with Long Beach officials on a split of impounded and future oil revenues. The state gets $120 million now and about $14 million a year in the future. It is proposed that all oil funds go into a reserve for water projects, including the $1.5-billion Feather River project. The legislature now in session is expected to be receptive to the idea.

ELECTRONICS BRIEFING—Seventy-five state highway engineers representing the New England states, New York and New Jersey got a thorough briefing on application of electronic computers and photogrammetry techniques in Albany, N. Y. last week. The four-day regional session—first of several coming up—was sponsored by Division One of the U.S. Bureau of Public Roads and led by a panel of engineers from the Bureau's Washington Office. First major effort to interest state highway departments in the startling prospects for employing electronics as a means of overcoming shortage of engineering and technical personnel was a national conference sponsored by the American Association of State Highway Officials in Chicago last month. (ENR March 15, p. 25).



How to press a Hyatt Bearing off or on

by HY WHEELER, the sage of the socket wrench



Most bearing damage results from improper operating conditions, or from *improper handling during installation and removal.* A little extra care in pressing bearings on or off may save a lot of time and money in the long run!

The best thing to use is an *arbor press* or a *bearing puller.* If neither is available, or can't be used, you can drive the bearing with a hammer—but *be careful to avoid injury to yourself or damage to the bearing.* REMEMBER:

1. Always direct the force *against the face of the press-fitted race* (usually the rotating one) to avoid damage to separators, rollers, etc.

2. Never hammer directly on races or separators and never use a wood or soft metal mallet; chips or splinters may get into the bearing.

3. In driving, use many smart, quick taps alternately on opposite sides to prevent the race from cocking and harming the shaft.

4. *Make sure your hands, tools and surroundings are clean—dirt quickly ruins bearings.*

AND ALWAYS REPLACE A HYATT WITH ANOTHER HYATT TO ASSURE PERFECT FIT AND PERFORMANCE. REMEMBER, WHEN IT COMES TO QUALITY...

there's no substitute for...

AVAILABLE THROUGH UNITED MOTORS DISTRIBUTORS

GM PARTS SALES

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STRAIGHT ◯ BARREL ◯ TAPER ◯

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WASHINGTON OBSERVER

A regional Reclamation Bureau office recommends that the Curecanti Dam project in Colorado be added to the Upper Colorado water storage program, which Congress has finally approved.

Curecanti, which will cost about $90 million, was left undecided pending a feasibility report by the bureau and a final say so by the Dept. of the Interior. Now, the Salt Lake City office of the bureau has made its report: If the power potential of Curecanti is increased by construction of three downstream power plants, the revenue from sales of electricity will be sufficient to make the project pay. This type of development would put the water from the reservoir through four plants in all.

Interior Dept. is now considering feasibility. There is no particular hurry, since first work on the Upper Colorado will be begun at Glen Canyon and Flaming Gorge Dams. But a final decision is expected before the fall elections.

The law permits Interior to start Curecanti on its own initiative once it finds the project feasible.

•

A national survey of community needs for water has been made by the Public Health Service. The report was financed by the Office of Defense Mobilization, which wanted to plan for materials allocation to such systems in the event of a national emergency. **Water supply for 367 areas serving 20,000,000 people** needs to be expanded either now or in the near future. The report shows that in most cases expansion of physical facilities—for pumping, treatment, transmission—is needed rather than new sources of either underground or surface water.

The breakdown shows 365 pumping facilities needed, 304 treatment facilities, 284 main transmission lines, 259 new sources of underground water, 126 new sources of surface water.

•

The merger of two building materials suppliers is being attacked by the Antitrust Division of the Justice Department. The suit, filed in Pittsburgh, asks that American Radiator and Standard Sanitary Corp. be forced to divest itself of Mullins Mfg. Corp., which it acquired in January.

American-Standard is the largest maker of bathtubs and kitchen sinks. Its total sales of plumbing equipment amounted to $400 million in 1954, when it produced about 40% of the cast iron bathtubs and 38% of the cast iron sinks produced. Mullins sales that year were $51 million. It made 30% of the steel kitchen cabinets produced, and 18% of the steel sinks.

The merger is a threat to competition in these fields according to Antitrust Chief Stanley Barnes. American-Standard officials say they are going to fight the case, that all legal aspects were carefully considered.

•

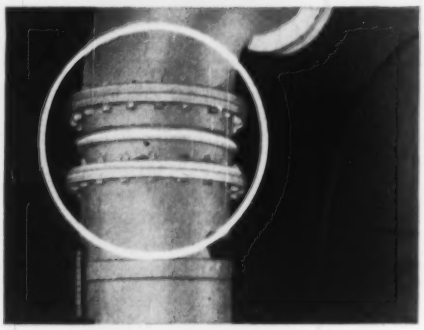
Government disaster loans for reconstruction in flooded and other disaster areas amounted to $29.2 million in the last half of 1955. The Small Business Administration approved 2,000 loans in that period to businesses and home owners.

•

Congressional Democrats keep producing new schemes to boost homebuilding. The latest would have the Treasury use up to 10% of the reserves behind GI life insurance to buy VA-guaranteed mortgages at par. This would amount to about $550 million, which would take care, of, say 50,000 new houses.

The Administration is against the proposal because of its potential drawdown on the federal budget.

How long can a U. S. Rubber Expansion Joint last



...some have been on the job since 1926, the year they were invented!

Here are just a few reasons why *these flexible connections are used in pressure or vacuum pipe lines...*

- U. S. Rubber Expansion Joints are resilient and, therefore, do not, like metal, set permanently when compressed.
- Constant flexing merely keeps "U. S." joints "alive"...prevents them from becoming brittle.
- They absorb both axial *and* lateral deflection far more than metal joints. Greater insulation against vibration and pump noises is provided.
- There is never any electrolysis, corrosion or erosion.
- U. S. Rubber joints handle pressures from 40 lbs. to 125 lbs. Compare!
- The outside diameter of the arch is smaller than that on metal joints. Face-to-face dimensions (even with multiple arches) are smaller.
- Weight is much less. This, plus the fact that no gasket is needed between flanges (unlike metal joints) results in a more easy installation, lowering the cost.

"U. S." was the first to develop rubber expansion joints. They are at work in every kind of industry, prolonging the life of equipment in pressure or vacuum pipe systems. Obtainable at any of the 28 "U. S." District Sales Offices, or write us at Rockefeller Center, New York 20, N. Y.

US RUBBER

Mechanical Goods Division

United States Rubber

Sticking close to a critical schedule . . .

- Winter saw plenty of construction on both sides of the river putting everyone in shape for . . .
- April 1—D-Day. The big push really started this week with all units now in action. The busy . . .
- Summer ahead will feature the start of full-scale concreting plus the big river diversion

St. Lawrence's Key Season Is Launched

"It'll be like touching a button here April first." That's the way one contractor on the snow-covered St. Lawrence power project last month predicted what happened this week. And he wasn't far wrong.

But you can't quite begin a construction season by touching a button, any more than you can launch a military offensive by blowing a whistle. There must be a build-up, and when the campaign is finally launched there must already have been certain units in action.

What happened this week on the St. Lawrence had a parallel—to continue the analogy—in the spring of 1945. It had been a rugged winter for forces massing in front of Germany's Siegfried line. Certain units had poked away at the line all winter, while others merely held; and behind it all was the great build-up, the preparation for the day on which all units would be totally engaged.

So it was this past winter on the St. Lawrence (p. 38)—some units in action, some just holding, all building up for the big push. And now the big push is on, the construction campaign of 1956.

• **River again engaged**—The site that saw the least action through the winter will see the most this summer, and into the fall. In a way, Long Sault Dam (map next page) will be the focal point of all activity on the vast and complex international power and navigation project during this season just started.

Men who have been mass-producing formwork all winter will emerge to place it and complete first-stage concreting of Long Sault Dam. Only 32,000 cu yd went into this spillway dam last season. Because its piers present intricate pours rather than great volumes of concrete, the contractors could take the winter off from placing concrete and put the time into form construction.

But now that they have started, Walsh Construction Co. and joint-venturers (for a complete list of major contractors, see ENR Nov. 3, 1955 p. 34) have a tough schedule of concreting to maintain. By next September they must have enough of the gated structure built to complete what should be the most spectacular river diversion of the whole project. The entire flow of the St. Lawrence (240,000 cfs and more) must be passed through the half of Long Sault Dam on which concreting resumed this week.

Upstream of Long Sault Dam, the diversion channel—into which St. Lawrence flow will be directed—has been excavated as "Cut F" across Long Sault Island all winter. And as spring arrived the excavation still went on toward that critical diversion date next September.

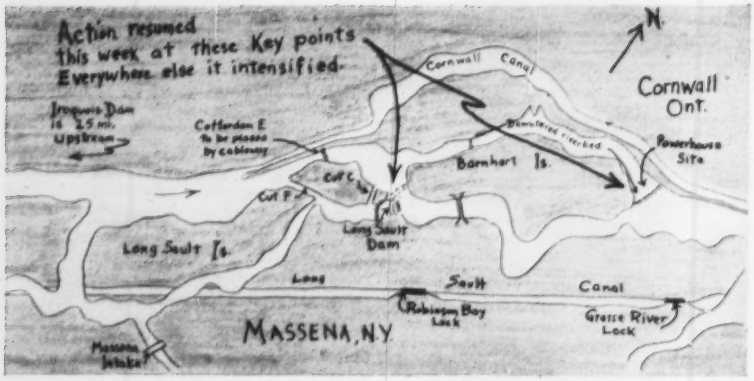
At winter's end, preparatory filling for access and work space had been done on the river's north shore. Between a point there and a point on Long Sault Island will be placed the cofferdam that will effect the diversion. A cableway will be used to place 8 to 12-ton stone across the head of the raging Long Sault, to push its flow off through Cut F. (Cut C will be closed.)

Fill of quarried rock placed this winter along the river's north shore will have the important function of retaining the Cornwall Canal there when, diversion completed, the riverbed alongside is finally let run dry.

• **Two nations, one excavation**—While first-stage construction at Long Sault Dam is being completed this season near the upstream end of Barnhart Island, the great unwatered river channel between that island's downstream tip and the Canadian mainland will be a busy hole indeed.

At its Canadian end, the winter-loving construction men of Ontario Hydro started their contractors (Iroquois Constructors) to work in February on monoliths of the power dam's north abutment (see p. 38). For Ontario Hydro this was the start of concrete operations that will go uninterrupted through next winter, and the winter after, until the 16 power units north of the international boundary are completed. Concrete from four 2-yd mixers will be belt conveyed to hoppers, then hopper-fed to buckets for rail transport to the cranes and the pours.

In the half of this hole that belongs to the Power Authority of the State of New York, the contracting combine headed by B. Perini & Sons opened its dambuilding season this week after a winter of steady excavation and grouting. Concrete produc-



ST. LAWRENCE BATTLEGROUND where constructors are again fully committed against the elements, the river and a very tough schedule.

tion will be stepped up fast, with four 4-cu-yd mixers, as the U. S. powerhouse constructors attempt to catch up with the Canadians—and then get ahead, if possible, by the end of their eight-month concreting season.

Whereas getting their abutment concrete started this winter was important to Ontario Hydro's schedule (wing dike construction is keyed to maintaining navigation in the 14-ft Cornwall Canal), it was important to PASNY that its excavation be further advanced before spring. The strategy of the U. S. contractors, as they explain it, was to spread out the concreting over as much length as possible, in order to take all the capacity of their large mixing plant. This they accomplished by getting well ahead on excavation during winter.

• **Two other U. S. dams**—The season just started will be big for both Iroquois Dam, 25 mi upstream, and the Massena Intake, a relatively minor structure to assure city water for Massena after the power pool is created.

At Iroquois Dam there will be difficult cofferdam construction as the contractor, Kiewit - Johnson - Johnson, pushes the gated dam further into the very fast current toward Iroquois, Ont.

• **Lock construction will start**—Work of the St. Lawrence Seaway Development Corp. in the U. S., and the Canadian St. Lawrence Seaway Authority across the river, continued through the winter. It was excavation almost entirely.

And while the Corps of Engineers (as construction agents for the U. S. Seaway corporation) did not share the April 1 starting date that was set for major U. S. power project concrete work by PASNY consultants Uhl, Hal & Rich, it has some major concreting soon to start.

On Robinson Bay Lock, the combine of Morrison-Knudsen, Perini-Quebec and Walsh has had the notice to proceed with its $20.1-million lock contract. For Grasse River Lock, the $26.8-million contract award has just been announced (ENR Mar. 29, p. 26). The two locks will share about equally about half a million cubic yards to be placed this year.

All told, it is a big season that began this week on the St. Lawrence. Concreting will supplant excavation as the center of interest. And by fall there will be a dramatic river diversion. Conservatively, 7,000 workers will be in the Massena-Cornwall area; a more accurate estimate is that 15,000 in all will be at work between Montreal and the Thousand Islands.

This is the key season. Completion on schedule in 1959 of the entire power-navigation complex probably depends more on the construction campaign just launched than on any other year's work to follow.

Confusion Reigns

TVA to expand on profits as bond financing stalls

The Tennessee Valley Authority is embarking on a $178-million expansion program without Congressional approval. The move has Congress and the Administration split right down the middle.

Comptroller General Joseph Campbell revealed details of the TVA plan in a letter to Rep. John Taber (R.-N. Y.), ranking Republican member and former chairman of the House Appropriations Committee. Campbell told Taber only an amendment to the law can halt TVA's move. He said: "The present law, as currently applied does not give the Congress effective control over TVA's expenditures of public funds for power facilities."

Campbell had been asked for his views on TVA's plans to spend power revenues on new steam units, despite the fact the Government Corporations Appropriations Act of 1948 specifically forbids the agency from using power income to start new projects. Campbell's investigation showed:

• Congress can most effectively control TVA's spending through appropriations. However, if it wants to permit TVA to use its power revenues or funds obtained from other sources to build new plants, Congress should require TVA to obtain specific and prior approval from Congress.

• On Sept. 28, 1955, the TVA board submitted to the Budget Bureau a plan to use power profits to add five new steam units at existing steam plants: Unit 4 (180,000 kw) at John Sevier; Units 7 & 8 (135,000 kw each) at Johnsonville, and Units 3 & 4 (225,000 kw each) at Gallatin. Expenditures involved would total $139 million. A short time before this, the board had, by a 2-1 vote, ordered the first $3.5 million of equipment for John Sevier, basing its ability to pay on income from its power sales.

The Budget Bureau did not approve the plan. But it did request Congress for an appropriation of $3.5 million to begin the Sevier unit, and for passage of a pending bill authorizing TVA to issue revenue bonds to complete this unit and begin two at Johnsonville.

Two weeks ago, the House endorsed the TVA board's request to use power revenues to pay for the initial equipment at Sevier. No Congressional action has yet been taken on the revenue bond proposal.

Meanwhile, the two Democratic holdovers on the TVA board—Harry Curtis and Raymond Paty—continued to override Eisenhower-appointed Chairman Herbert D. Vogel in moving ahead on the expansion plan. On Jan. 17, 1956, with Vogel abstaining, they authorized letters of intent covering acquisition of major equipment for the two big units at Gallatin, the two at Johnsonville for which the Budget Bureau had requested bonding authority, and an additional pair of units at Johnsonville. With the previous action on the Sevier unit, this brought the total of planned additional installations to 1,170,000 kw.

For fiscal 1956 and 1957, TVA itself estimates its net power proceeds at about $100 million each year. Although TVA plans now to repay to the Treasury $59 million in 1956, and $75 million in 1957, Campbell pointed out that the actual repayment for investment in its plant is determined by the TVA board. In other words, should the pro-expansionist board as now constituted vote in favor of returning less than this to the Treasury in the next few years, it would have far more cash available for additions to its existing steam plants.

Limited Access Hit

Power of highway unit to close roads is challenged

A suit challenging the authority of the North Carolina Highway Commission to designate highways as limited access roads has just been filed, pointing up the need of modern right-of-way legislation in North Carolina. The action might also threaten the ability of the state to take full advantage of extra federal-aid money promised for roads.

The suit, filed for W. A. Hedrick, a Salisbury property owner, by a team of top-flight attorneys, asks the court to enjoin Chairman A. H. Graham and 14 members of the highway commission from converting sections of U.S. 29, U.S. 52, and U.S. 70 through his land into a limited access highway.

The action is based on the grounds that the highway commission has no authority to establish limited access highways, and that a bill in which the commission sought such authority was defeated in the 1951 session of the state legislature.

The state admittedly will find the contention hard to refute. The highway commission has been able to get by up to now only because its lawyers have been able to avoid legal showdowns on the limited access question. The suit just filed is the first determined challenge of the commission's authority to post limited access roads, and the question no longer can be avoided.

The plaintiff in the action claims that limiting access would decrease sharply the sales value of the property he owns along the route.

Statutes under which the highway commission has acquired property for highways give the agency power to use condemnation proceedings if necessary—but the statutes were drawn years before highway officials became concerned seriously with limited access.

The highway commission has known for some time that it eventually would have to face the fact that its land acquisition laws are inadequate. Chairman Graham and Chief Engineer W. H. Rogers, Jr., have been campaigning for corrective legislation. They have won the support of Gov. Luther H. Hodges and the governor's Legislative Highway Study Committee, but have not yet obtained from the legislature, the laws they need.

Such legislation may be sought during a special session of the legislature the governor is expected to call this summer, since the state's highway program is now threatened by a court test.

The Federal Bureau of Public Roads, it is pointed out, already has made limited access a prime requirement for sections of the interstate highway system to be built under the multi-billion-dollar bill now before Congress.

Since there is some doubt whether the highway commission has the power to condemn or curtail a property owner's right to access to a highway, the commission has acquired right-of-way for the controlled access roads already built through negotiations with the property owners. Graham said the commission has been buying the right-of-way access along with the right-of-way itself.

He explained that the case at Lexington is the first in which the commission has been unable to reach some sort of an agreement with the property owner.

Unbraced Frames Fail After Erection

Eleven 160-ft welded steel rigid frames collapsed last month during erection of a $1.6-million cargo shed in the Long Beach, Calif., harbor. Reasons for the failure are being withheld pending settlement of a dispute between three contractors involved and their insurance companies.

H. E. Robertson Construction Co. was erecting the steel under subcontract with National Steel and Shipbuilding Co., San Diego, fabricators of the steel, which in turn was under subcontract with H. K. Ferguson Co., the general contractor. The Long Beach Harbor Department designed the structure.

The 1,120x160-ft shed was designed as seven independent units, each with five 160x32-ft bays, as a precaution against land subsidence, which is a hazard in the area. At the time of the accident, the five frames of the first unit had been plumbed and braced. Eleven more had been erected but had not been plumbed. Some purlins and monitor steel were in place and eave braces attached on one side of the eleven frames, but there was no bracing on the other side except guys. These frames toppled while a truck crane was between them and the first structural unit disconnecting temporary connecting members. One man was injured.

There was a gusty wind at the time. The 500 tons of steel fell in the direction of the wind.

Fluoridation Under Fire And Appraisal in Two Cities

A 3-2 vote by the Board of Health edged Wilmington, Del., a bit closer to fluoridation of its water supply.

The question now has been referred to the city's Board of Water Commissioners for a financial study. Outlook quick installation is poor as Water Board has prepared its 1957 budget.

Meanwhile in New York City, several members of the city's Department of Health and Department of Water, Gas & Electricity spent the week taking pot shots at one another on the fluoridation question. A Health Department spokesman called opponents of the fluoridation "fuzzy-minded." Water Commissioner Ford called for the use of fluoride pills to be distributed to those desirous of individually treating their water.

Nearly tripling the last five-year plan . . .

$675 Million to Be Spent by Chicago

When Chicago's Engineering Board of Review took the wraps off of its proposed five-year capital improvement program last week, the sum total of the work involved was somewhat staggering even to those accustomed to dealing in giant-size public works programs in the Windy City. As spelled out in considerable detail, by Board of Review Chairman Loyd M. Johnson, also Chicago's Commissioner of Streets and Sanitation, the master plan of public improvements calls for the expenditure of $675 million for 1956-1960.

This total is nearly three times the $255 million spent over the past five years (1951-1955). Further, the proposed construction and capital improvement program for this year will cost $182 million or nearly 75% of the total expenditures for the past five years.

As previous capital improvements have been treated, this one will be revised annually, to meet changing requirements. In 1946 the board prepared a seven-year program which carried through to 1953, and in that year it prepared a five-year program for 1954-1958 (ENR Dec. 31, 1953, p. 38).

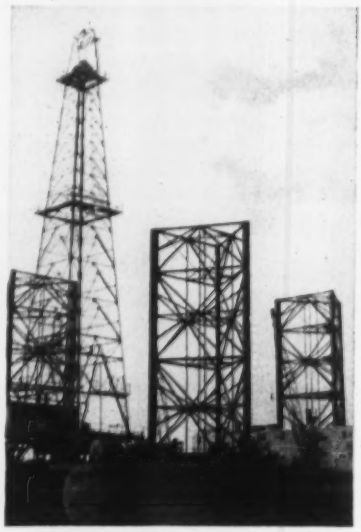
Although the five-year program proposed for 1956 through 1960 is impressive due to its magnitude, the program for this year is of immediate interest to both public officials and the construction industry in that area. Broken down, the spending program looks like this:

	Million
Toll Roads	$ 44.2
Freeways	10.6
Bridges, Viaducts & RR Grade Separations	16.7
Street Paving & Resurfacing	6.6
Street Lighting	19.0
Channelization & Street Grade Separations	5.0
Traffic Signals	2.2
Subways	12.8
Airports	6.1
Central District Water Filtration Plant	13.0
Water Main Extensions & Miscellaneous	20.6
Sewers	7.8
Incinerator Plants	5.0
Miscellaneous Buildings	6.6
Parking Facilities	5.0
Rivers, Harbors and Parks	1.0
Total	$182.2

In addition to the $182-million program for this year, the Board of Engineering Review proposes that expenditures for a continuation of this construction be continued for the next four years in the following amounts: $137.2 million for 1957; $133.5 million for 1958; $117.3 million for 1959; and $104.8 million for 1960. Using overall figures, this five-year program breaks down into these classes of improvements as follows:

	Million
Highways	$320.7
Waterworks Improvements	154.5
Subways	60.0
Buildings and Equipment	40.0
Airports	36.1
Sewers	35.5
Parking Facilities	22.5
Parks and Recreation	4.0
Rivers and Harbors	1.7
Total	$675.0

Biggest item in the five-year highway-improvement program is the $88-million Calumet Skyway toll project extending from about 66th and State St. to a connection with the Indiana East-West toll road, at the state line (ENR Feb. 17, 1955, p. 44).



New Offshore Tower Built

Three-legged oil drilling tower, for use in offshore oil drilling by Zapata Off-Shore Co. of Houston, differs from "Texas Tower" platforms already at work in Gulf of Mexico in that its open-work steel legs are raised and lowered mechanically. Designed and built by R. G. LeTourneau, Inc., the hull is 20 ft thick, and triangular in shape, 180 ft by 150 ft; carries three gear-driven, 140-ft-long steel legs; a complement of 46 men, and full equipment for oil drilling.

Two other large items are $45 million worth of freeways and $39 million in bridges, viaducts and railroad grade separations.

The five-year waterworks improvement program includes $80 million for Chicago's Central District Filtration Plant now under construction in Lake Michigan just north of Navy Pier (ENR Nov. 3, 1955, p. 26).

To finance this big five-year program, Chicago either has the money in sight or proposes to secure it under various approved bond issues, without jeopardizing the city's debt structure. Here's where it expects to get the $675 million:

	Million
Waterworks Certificates	$152.7
Authorized Corporation Bonds	114.7
Authorized Revenue Bonds (Including Calumet Skyway Toll Highway Bonds)	110.5
Financing Under Study	98.0
Motor Fuel Tax	93.6
Proposed Corporation Bonds	69.8
State and Federal Aid	20.1
Proposed Revenue Bonds	10.3
Miscellaneous Revenue	5.3
Total	$675.0

From a physical standpoint here are some major items the $675 million will provide: Construction and reconstruction of 200 mi of arterial streets; completion of four bascule bridges now under construction and the building of three new bascules, three fixed bridges, seven grade separations, five viaducts; and start construction on six movable bridges.

It will also complete the northwest, south and southwest routes of the city's comprehensive expressway system and build the Calumet Skyway Toll Road. Further the West Side subway, the Congress St. superhighway and a downtown subway in Washington St. as well as a subway in the median strip of the northwest superhighway will be built with the money.

Airport improvements call for the completion of Stages 2 and 3 at O'Hare Airfield which will include an additional 8,000-ft runway and provide a total of 37 gate positions to facilitate the loading and unloading passengers.

The five-year program also calls for orderly continuation of construction of the Central District Filtration Plant and large diameter tunnels; improvements to nine water pumping stations and perhaps the construction of additional city parking garages.

Los Angeles to let $12-million start on . . .

The Big Switch at Hyperion

The Los Angeles Department of Public Works has called for bids on the first construction work on its new sewage disposal program for which $60 million in bonds were voted last spring.

Bids are to be opened on April 18 for modifications of a sludge pumping plant at Hyperion and on April 25 for 20,000 lin ft of the 9½-ft-dia North Central Outfall Sewer, which is to be all in tunnel except for 300 ft. An early bid call is expected for a 20-in.-dia sludge outfall to extend 7 mi into the Pacific Ocean.

The work will mark the first step in increasing capacity of Los Angeles' Hyperion treatment plant from 245 to 420 mgd. Major concept of the program is deep-ocean disposal of effluent and sludge, plus modification of Hyperion's high-rate activated sludge process to some lesser degree of treatment. The program will also provide badly needed main trunk and collecting facilities.

• **Pumping plant**—The sludge pumping plant will be one of the smallest jobs in the sewerage program with only about $70,000 budgeted. But it is an important one since it will be operated 24 hours a day; however, sludge will not be pumped continuously. Treatment plant effluent will be pumped through the outfall when sludge is not being moved to prevent the line from clogging.

Sludge will amount to some 2½ mgd, but the outfall will carry about 6½ mgd of combined sludge and sewage effluent. The sludge has 3% solids content and results from two-stage digestion. Existing sludge digesters will be used. Existing sludge filter and drier equipment also will be maintained for use if at some future time it becomes economical to process sludge for fertilizer.

• **Sewage outfall**—The second major contract ready for bids is 20,000 ft of the North Central Outfall Sewer that will bring additional sewage to Hyperion. The work, worth about $9 million, will be bid under several alternate schemes. Bids will be taken for the entire job, but it will be possible to bid the work in either halves or thirds with progress from portals at either end and from a central shaft. Also as alternates will be different plans for providing vinyl resin plastic lining. One alternate calls for lining the top 260 deg of the full tunnel. Another calls for lining only certain parts of the tunnel.

The tunnel traverses poorly cemented sand formations. But not much trouble is expected from pressure or extreme caving conditions. In many places the tunnel will be 100 ft below ground surface. Reason for rushing the tunnel work is that it is expected to take as long or longer to complete than any of the other contracts.

• **Sludge outfall**—The sludge line will probably be a coated steel shell with ½-in. thickness, but reinforced concrete is also being considered. It will discharge in about a 300-ft depth of sea water.

If it is a steel pipe, the 20-in. ID line will have cement mortar lining and be protected from galvanic action by a cathodic protection installation. Exterior of the pipe will be gunited and coated with other protective material. $2.8 million is budgeted for the sludge line.

• **More bid calls**—Plans for the contracts were by Hyperion Engineers, a joint venture formed to design $40 million of the program. Still in the design stage are four other contracts. Tentative schedule calls for a June bid opening for modifications of the Hyperion plant budgeted at $2.5 million and for the second half of the North Central Outfall Sewer for which $9 million has been set aside. This part of the sewer line will mostly be in open trench section with only about 7,000 ft in tunnel.

Later this year—probably in September—bids will be opened for the 12-ft ID effluent line budgeted at $16 million. Exact length of the line is yet to be established. Hyperion Engineers are waiting for the results of oceanographic research being carried out for them by the Hancock Foundation of the University of Southern California. But it is expected to be about 6 mi long, disposing effluent in at least a 200-ft ocean depth.

Final contract to be bid at about the same time as the ocean outfall will be an effluent pumping plant with $1.2 million available for this work. The plant will be capable of pumping peak flows of 600 mgd through the outfall that will handle about 300 mgd by gravity flow.

• **City designing work**—In addition to the work under design by Hyperion Engineers, city engineers are designing $20 million of smaller sewer work. So far nine contracts have been put out for bid. And in the next year or two there will be literally scores of others ranging in size from $10,000 to $1.4 million.

Hyperion Engineers is a joint venture of Holmes & Narver, Inc.; Daniel, Mann, Johnson & Mendenhall; and Koebig and Koebig, all of Los Angeles. Working closely with Hyperion Engineers and the Los Angeles Board of Public Works is a consulting board made up of representatives of the joint venture firms together with Richard R. Kennedy of San Francisco, Fred D. Bowlus of Whittier and Lyall Pardee, Los Angeles City Engineer.

A Tunnel to Go

Bid call on $15-million Canada job set for June

The engineering contract for a planned $15-17 million, four-lane Fraser River tunnel at Deas Island has been awarded by British Columbia to Foundation of Canada Engineering Corp. of Vancouver.

The engineering firm will submit a full engineering report to Highways Minister Philip Gaglardi. Bids for construction will be called probably within three months. The tunnel is part of a proposed $30-million highway project to speed traffic between Vancouver and the U.S. border.

Meanwhile, the borrowing power of B.C. Toll Highways and Bridges Authority (under which the tunnel will be financed), was increased from $50 million to $60 million at the concluding sessions of the provincial legislature. At present the authority has $43 million of projects on the drawing boards, and the increase in borrowing power will enable it to proceed with the Deas Island tunnel.

The tunnel is planned as a four-lane structure to link up with the Oak Street Bridge, now under construction across the north arm of the Fraser, via a proposed four-lane highway across Lulu Island. Traffic from the U.S. would enter the tunnel from a proposed express highway from the border.

Gaglardi pointed out the Deas Island crossing would provide Vancouver with a good "escape" route in an emergency. He said it could take more than 40% of the traffic load from the existing Patullo Bridge at New Westminster, and was the most efficient link with an ultimately wider Trans-Canada Highway up the Fraser Valley.

Preliminary engineering studies on the Deas tunnel were prepared for the government by Vancouver engineering firm of Crippen Wright Engineering Ltd., and Foundation of Canada Engineering Corp.

NAHB gives a special course in . . .

Beating the Slump in Homebuilding

Vincent B. Smith
Washington Staff

Homebuilders are hot after the consumer's disposable dollar. Last week the National Association of Home Builders put on its first merchandising school for people who sell new homes. Some 100 homebuilders—and salesmen for homebuilders—plunked down $135 for a three-day course designed to bring up ideas on how the housing industry can sell its product. The idea is to use the techniques of the auto and home appliance merchandisers to package, promote, and style a product to get their share—or more—in the feverish struggle for a bigger bite of the consumer's weekly paycheck.

Selling of new houses has been approached in a hit-or-miss fashion for years. The marvel of the industry and its customers has been that government-insured mortgages have brought the price of a home to the point where almost anyone steadily employed can buy a house, if he cares enough about it.

Obviously, enough people care, because the building of single-family homes has been one of the boomiest sectors of the booming U. S. economy.

But the pressure is definitely on now. There's some doubt as to whether the consumer will buy as many homes this year as last. Prices have been going up, and the market has had ominous soft spots in the past few months.

The result is that the homebuilders—through their trade association—decided there's a real need to swap ideas on selling. No longer, they say, can you be sure you'll hold your own just because you sold the houses you built during the past ten years.

For the homebuilders, merchandising is a new book. The 38,000 members of NAHB completed more than a million new homes last year—an average of 25 per member. A number of builders put up more than 1,000 homes per year, and a few built less than 10; the rest fall in between.

The Levitts of the industry naturally bring to their production and sales problems all the talents of a big industrial enterprise. But many of the builders still play by ear—despite the fact that building, say, 100 $15,000 homes means doing a volume of $1.5 million per year—a sizable enterprise.

Obviously, builders have been practicing enough of the essentials of good product design and selling or they wouldn't have made all that money.

As far as anyone can find out, though, up until the NAHB contracted for the job to be done, no one had ever put together a manual on the ingredients you need to put into a home to sell. By the time the first class got under way, Ira Mosher and Associates, Inc. put together a 2½ lb textbook for the NAHB short course covering marketing (location, design, color, price), advertising (newspapers, road signs, radio-television, brochures); sales promotion (model homes, home shows, cooperative programs with suppliers and the like), and selling techniques (motivating the prospect and the salesman, expanding your list of prospects, a technique for actually closing the sale).

To put across the merchandising lessons, the school had five homebuilders with a long record of success among the 17 experts on the faculty. Backstopping the five builders were specialists in merchandising, market analysis, design of houses, use of color, promotion and advertising.

Market Analysis

The first thing the builders learned is to get three things right: the house, the location and the price, or financing terms.

A homebuilder, like any other merchandiser who aims to stay in business, has first to order goods that people will buy. His decision date, however, runs back even farther than that of an automobile manufacturer. When a homebuilder is buying land, his purchase order may antedate the bulk of his sales by as much as five or six years or longer.

Market analysis actually is the root of success or failure. The easy out is to put a market analyst on his staff or to engage a home marketing consultant. But a comprehensive study by a consultant may cost him from $2,500 for a small city of 25,000 to $15,000 for a population of 450,000, unless he can get other local builders to share the cost.

If a staff man or consultant is ruled out, there are ways a builder can help himself to get information on the essentials: overhang of unsold new dwellings in the community, employment and income, the local population trend, migration into the area and mobility—or rate of movement—of families within the area, and volume of new home building. Best sources for these facts, on which projections may be based, are his local homebuilders association, utility companies, the chamber of commerce or board of trade, the newspapers, telephone and milk companies (for customer changes), and local building permit data.

More complete market information can be obtained by groups of businessmen with a common interest in housing. In nine areas, such groups have formed to build up their joint stock of background data—including area information on volume and characteristics of new houses built, mortgage loans, foreclosures, materials prices, labor supply, wage rates, and VA and FHA activities.

A veteran homebuilder, Edward R. Carr, past president of NAHB and current president of the Washington, D. C., Board of Trade says the right lot in the right place is the most important step in merchandising the future house to be built there.

Carr, who builds and sells some 200 houses a year, advised his fellow members, "Don't blink at paying through the nose for a better location costing a couple of hundred dollars more per lot."

Design and Color

Design of the house is getting more attention. Builders no longer rely on their own design, the one they like because they like to build it. Actually, design problems are much more easily solved than you might think. Many big firms have their own architects—and there are now good independent home architects in every sizable city. Smart builders are paying the relatively small added cost to get the best architectural advice on designs that will sell in their area.

For the suburban developer, a contemporary design is almost a must. It's what most buyers are looking for, and it's what suppliers and builders are well equipped to build today.

Builders find a wealth of good design ideas available in almost any style house—rambler, two-story, split-level or what have you. Preference for a particular type, however, tends to be local. Split-levels are hottest in some areas, in others buyers prefer the rambler. Both styles are built in every area, of course.

W. Shrewsbury Pusey, director of the Pusey Studios, told the builders: Keep control of the color.

Start with the roofs, he told the builders. Keep them neutral, stay away from the reds, blues and greens.

For the body paints in a row of houses, separate the strong colors such as coral with neutral bodies of sand, beige or ivory. Overall, in a series of houses, maintain a good rhythm of compatible, harmonious colors and achieve the continuity you want by repeating a color accent on the adjoining house (called linking) or jumping over to the accent of the next house (called bridging).

With color control of a project in the builder's hands, the development looks better and better as more houses go up. But in a project where buyers have a choice of colors, the development inevitably deteriorates in appearance as additional houses are built.

The builders agreed with Pusey that color control is desirable to make project houses salable. In fact, many of them said color is the real key to merchandising. But they have found that color control is accepted without quibble by buyers in the $7,000-$9,500 range, but the $15,000-and-up customer wants a color choice.

How to Advertise

Builders were hit or miss about some of the things they need to know. They know, for instance, that the tendency recently has been for higher priced homes to go up faster than the ability of people to pay for them. But they thought, an ad on the right hand page of a newspaper would be more widely read than one on the left hand page (this, they said, is false).

Builders also discovered that more than 1,000,000 families move past the $5,000 yearly income mark each year.

In dollar terms, homebuilding, exclusive of land, may be expected to yield sales of around $15 billion a year during the next five years.

An analysis of recent home advertisements showed that in the price range between $14,000 and $60,000, three-fourths were priced between $22,000 and $28,000.

The average newspaper reader attention to real estate sections is around 35%. And, the three most important types of homebuilder advertising, in the order of their importance are newspapers, road signs and radio-television.

Homebuilders seem to favor use of both newspapers in a two-paper city, with some builders splitting their advertising coverage over three weeks or longer in their first-choice paper, followed by a shorter run in the second paper. Most of them advise display advertising in the Sunday real estate section to announce opening of a model home, followed up by classified or display ads, or both, in later days and weeks to maintain interest.

A Boston builder says his outfit has spent around $20,000 in newspaper advertising for the first 35 houses of a project he established in an "area you couldn't find" 22 mi from metropolitan Boston.

One Midwest builder said Westinghouse Corp. gave him a good deal on cooperative ads contributing 25% of the cost, with the builder in full control of the ads except for the manufacturer's symbol. Others reported as good or even better cooperation from manufacturers like American-Standard, Minneapolis-Honeywell and Chrysler Airtemp.

But some builders who had gone into cooperative advertising do not like the management because they have found they can't control the ads. A number were against subcontractor and supplier tie-ins. Several said they no longer use cooperative ads. When you figure outlay, one said it costs more than it's worth to phone and sign up the various suppliers and subcontractors.

The problem can be acute. A Chicago man who builds and sells $3 million a year of low-cost homes, has never spent more than $15,000 in a year—hit or miss—on advertising. And of all the ad agencies they have gone to, not one has been able to tell them what should be done.

This Chicago homebuilder says his company could sell 200 homes this year without spending any money for advertising. But he figures he might try for 400 this year, and that number couldn't be sold without the help of advertising. Why not advertise, he asks, when 52% of the cost is paid by the federal government as a charge off on corporate income tax?

An Erie builder is strong for advertising he lays out a complete promotion program, budgeted for each phase. Institutional roadside signs, built on rented sites by the firm's own carpenters and designed by poster experts, plant the firm name in the public mind—he's sure—and bring out the crowds when the builder advertises a new model house or project.

This builder likes the free stuff, as he calls it. You can get it if you know the angles, he told his fellow students. Don't take the first answer when you ask a supplier to cooperate, he advised. The utility companies—gas, electricity and so on—even the automobile dealers—are glad to come in and help on advertising and sales if you give them a fair return, he reported.

Half the builders, the sample indicates, use radio; but only a few have tried TV, and then in a small way. However, businesses related to homebuilding have made a success of advertising with 1½-hour movies in Chicago, one reported. He wondered why local homebuilder associations couldn't make a similar TV program pay off. In another city, a second builder said, the local distributor for the country's biggest prefab manufacturer sponsors the Amos 'n Andy half hour and shows new houses in the commercial spot. People flock out to see the homes right after the program, he reported.

A South Bend, Ind. builder said he had good results to report for the first three weeks of a $10,000 advertising run he recently started on TV. Half the money goes to sell new houses and half to solicit real estate brokerage business. The first Sunday of the new program brought out the biggest crowd up to that time to look at the new houses and also netted eight broker listings.

Advertising on the movie screen of a drive-in theater at West Memphis, Ark., seems to be paying off in sales of his $9,500 to $12,500 houses; another builder said the theater runs a standard short home promotion movie twice a night and adds the builder's name and the location of the houses at the low cost of less than $400 for three months.

Most builders said they sell from a model house, usually erected on the project site. One, however, reported that he had sold eight houses to go up on a new development several miles away merely by displaying the proposed plans to homeseekers who were looking at houses of a different type being built on an active project. As a project nears completion, he recommended building on it a model house for the next project to get public reaction for a couple of months before actually starting the new development.

Price Is the Key

Rock-bottom consideration in selling any house, all agree, is price. This showed quickly when builders were asked to list in order of importance the factors governing the choice between two tracts available for building new homes to be priced under $12,000.

There was a wide range of answers including location (including transportation, good approaches and surroundings, schools, churches, shopping, etc.), utilities and paved roads, cost of land and grading.

But Mrs. Henny Mollgard, Milwaukee builder with a 15-year record of success, had the rock-bottom answer:

"For homes no higher than $12,000, the down payment and the monthly charge are the factors that determine whether the house will sell or won't sell. You can forget all the rest. If you can set a $200 down pay-

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ment and a $60 or $70 monthly payment, the house will sell no matter where it is located. Therefore, the thing to do is to buy the site that the VA and the FHA will approve to enable you to give the best terms to the buyer."

Builders as a body griped about the blindness of mortgage lenders that causes them to reject as a bad credit risk a man who is paying for a car on time. Thomas Coogan, president of Housing Securities, Inc., and former head of the NAHB, told the conference again that a man who buys a home becomes a better all-around credit risk than he was before.

In a debtor economy, Coogan says the homebuilder has to compete with installment-plan sellers of autos, TV sets, household equipment and vacation trips.

A builder, therefore, must design for price terms when he makes his plans if he wants his house to be half-sold when finished, Coogan warned. That is all the more important because the cost of houses is going up faster than incomes. Family income has risen a little more than $900 in the last five years, he said, while the median price of VA homes has gone up $3,450—from $9,000 to $12,450.

But analysis of the figures for houses built open new vistas to homebuilders, he pointed out. For example, only 4% of the new houses built last year were sold to low-income families. Yet families with incomes under $3,000 make up nearly 25% of the population.

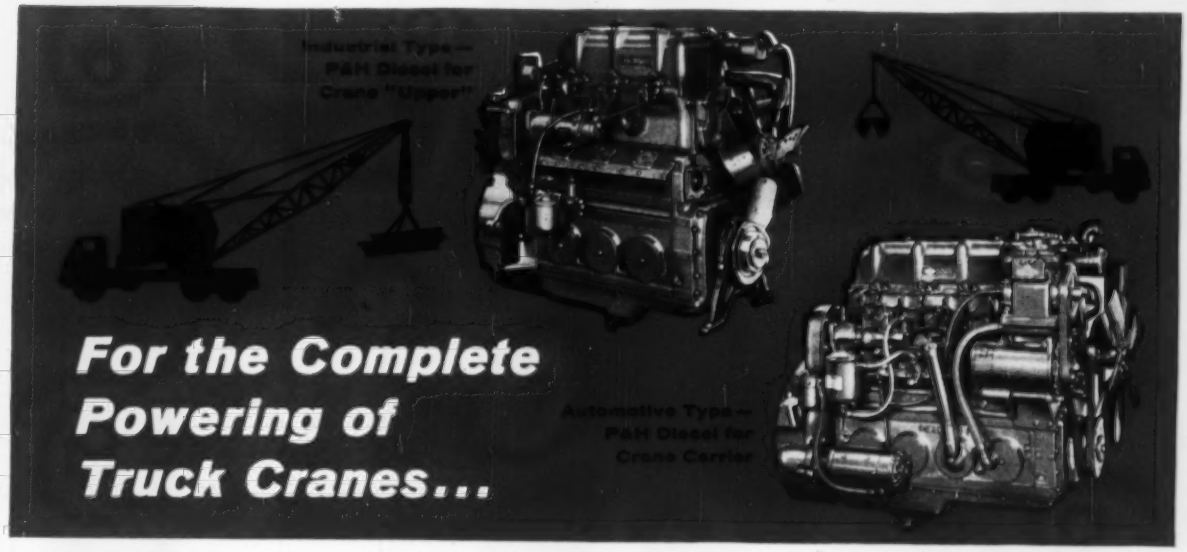
$110 Million Scheduled for Defense Building in Alaska

The Alaska District of the Corps of Engineers estimates $110 million will be placed in defense construction work for the Army and Air Force in widely scattered sites throughout the territory during the calendar year of 1956. This includes work on contracts now in progress and others to be awarded.

More than $80 million is scheduled for the Air Force, the balance for the Army. Some sites are not listed for security reasons.

For the Army the largest amount is scheduled for Nike North and South, totaling about $10 million. Next is Fort Richardson, biggest Army base in the territory, with $5,882,000.

An additional $5 million is being allocated for construction at various installations. Some work already is under contract and the remainder will be offered for open competitive bidding during the year.



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To design the double-antenna tower to withstand extreme wind velocities of 155 miles per hour was a tough engineering problem. This was solved by supporting the tower with 30 Tiger Brand Galvanized Guy Lines ranging in size from 1⅛″ to 2″ in diameter. The strongest guy lines are designed to withstand pulling stresses up to 245 tons. They are anchored in concrete—some as far as 1050 feet from the tower.

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A City's Redevelopment Moves Into High Gear

A skillful combination of planning, public relations and political push is furnishing the steam this week as New Haven's urban renewal pot begins to boil.

Mayor Richard C. Lee and the New Haven Citizens Action Commission (with a membership of 500) jointly announced the start of a 200-acre redevelopment survey in downtown New Haven, covering most of the area between the city's railroad station and the Oak Street Connector.

To finance the survey, the city will have $127,090 in federal funds just allotted to the project. Its aim is to give the 272-year-old city a modern downtown section that will encourage merchants to stay in the established commercial area.

But this is only part of the fast-moving plans to give the old city a new look. It follows by a week signing of final papers for a federal loan and grant of more than $6.6 million to initiate redevelopment of 42 acres in the Oak Street area.

The Oak Street Connector will account for 14 acres while the Oak Street project proper will result in the razing of 27 acres of slums only one block from the city's Green and the Yale University campus.

Also in progress under the urban renewal program is a $115,000 survey of the 30-acre Wooster Square neighborhood which is deteriorating into a slum area. A new building code will be introduced soon—with a pledge of strict enforcement. This, combined with neighborhood improvement loans, is expected to save this area.

Othe large-scale auxiliary improvements based on the Oak Street area projects are:

- Relocation of the present city market to a 30-acre regional market center.
- Construction of a 21-acre mercantile and industrial park.

• Redevelopment pays—The Oak Street redevelopment is expected to cost the city $575,000 as its share of the total. But, in the 42 acres scheduled for razing and reconstruction, the city now spends $200,000 a year for policing, special fire protection, welfare and special crime prevention activities. In return New Haven collects only $105,000 in tax revenues. When it's redeveloped, the cost of city services for the area will drop to $100,000 a year—while tax revenues will jump to $280,000, according to Mayor Lee.

The Oak Street Connector, a major part of the project, will be a six-lane superhighway flanked on each side by a two-lane service street. The $10-million, state-aided project will get under way next year at the same time the Connecticut Turnpike is built around the edge of New Haven Harbor. The connector will provide quick access to either the turnpike or the Merritt Parkway on the opposite side of the city. The connector will run through the present slum section.

In the 27-acre Oak Street section, 515 families will be displaced. Most of them will go into public housing to be provided. Scheduled for demolition along with the tenement buildings are 150 shops, stores and industrial establishments.

These structures will be replaced with:

- A new $5-million to $7-million office building for Southern New England Telephone Co.
- Several blocks of 12-story apartment buildings to provide 710 units at a cost of about $7 million.
- Two acres of smaller offices and apartments with a total price tag of $1 million.
- Parking space for more than 1,000 automobiles.

The apartments, with rentals pegged for the middle and upper income brackets, will be only a few minutes walking distance from the existing $40-million Yale-New Haven Medical Center.

The new regional market, surrounded by the harbor, the Connecticut Turnpike and the New Haven Railroad, will be financed by a $2-million revenue bond issue authorized by the 1955 legislature.

The regional market site is part of 143 acres of filled land along more than a mile of the harbor front. Also planned for this area (purchased by the city for $75,000) is a deep-water ship terminal, industrial tracts and a waterfront park and esplanade.

• Here's how it's accomplished—New Haven's program is ambitious but it shows clear signs of dreams turning into reality. How is it being done—when other cities, operating on a smaller scale, seem to get bogged down on urban redevelopment? Mayor Lee offers one answer:

"We have pursued gradually the subject of redevelopment, but we started with things people could understand—playgrounds, schools, a traffic program. However, all were interlocked as improvements which were the leading edge of redevelopment."

Another sound reason for the city's progress on the redevelopment front is the method of selling the program to the people. Says Mayor Lee:

"We have been completely frank. We have done nothing more or less than to apply fundamentals of sound public relations to a series of delicate community problems."

The public relations aspect is seen in a trip to Philadelphia arranged for 75 influential New Haven citizens who had an opportunity there to see redevelopment in progress.

Public relations can be noted, too, in the 15 playgrounds developed in "sore spots" of the city. Regarded in New Haven as pilot redevelopment projects, they show what even a small

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improvement can mean to a neighborhood.

This is in line with Mayor Lee's feeling that the public will want redevelopment when it understands its specific benefits—and that, in turn, assures officials of community support.

To start the program rolling, New Haven citizens received factual reports from city court judges, the fire chief, police chief, redevelopment director, welfare agencies, assessors' board and other segments of the city government. Their statements carried impact.

With a clear picture of what was needed, the Citizens Action Commission picked up the ball. This group, representing people from all walks of life, has no connection with the city government and is financed by the New Haven Foundation through an annual grant ranging from $20,000 to $35,000.

The commission worked up interest throughout the city until New Haven became redevelopment-conscious. That interest is now paying off as New Haven citizens pitch in to give new life to one of New England's most respected communities.

Air Age Problem

San Diego still seeks a site for municipal field

For a long time the Civil Aeronautics Administration has told San Diego that its downtown air terminal —Lindbergh Field—is too crowded to permit use of instrument landing facilities. But the city has had a frustrating time trying to obtain a first-rate field. And now a new $19,000 survey seems to offer no simple solution to the problem.

The survey—made by Leigh Fisher of South Bend, Ind., airport planning consultant—includes one major suggestion that would cost $20 million. This calls for the city to: (1) Dredge and fill land on the seaward side of North Island, a San Diego Bay site now occupied by a Naval Air Station; (2) negotiate a joint-use agreement with the Navy; (3) build a 10,000-ft civilian runway paralleling the Navy's runway. Main access to the metropolitan area would be by way of the projected Coronado-San Diego vehicular tube under the bay.

The trouble with this new proposal is that the Navy turned it down late last month after conferences with the Navy Bureau of Aeronautics in Washington.

San Diego has run up against the Navy before. At one point the city took over Miramar, an auxiliary World War II Naval air field. But the Navy regained it at the beginning of the Korean War and has turned it into a jet air base. San Diego began development of Montgomery Field, a city auxiliary airport near Miramar. But the Navy decided this development would interfere with Miramar's flight pattern.

Now the rift between the city and the Navy over control of available airports and sites seems to be widening. Another problem already in the making revolves around the Miramar base. The Navy wants to expand and buy 1,100 acres of industrially-zoned land next to the station. The site, however, also adjoins San Diego's Montgomery Field—and some of the land is city owned. San Diego already has announced it will oppose the Navy's request "in view of present developments."

These are the other suggestions made by the airport planning consultant:

- Lindbergh Field should be turned over by the city to neighboring aircraft plants.
- The present fledgling municipal airport—Montgomery Field—should be sold for industrial sites.
- Runways at the Tijuana, Mexico, airport should be extended across the border, and a joint-use agreement negotiated between the U. S. and Mexico. The Mexican facility, located on mesa land, could serve as an alternate when the near sea-level airport at North Island is closed by unfavorable weather conditions.

Grants for Air Pollution Research Announced by USPHS

The expanded effort to size up the dimensions of the nation's air pollution problem and find new means to bring it under control was highlighted by two recent developments, both emanating from the U. S. Public Health Service.

- USPHS announced a $250,988 batch of grants and negotiated contracts for 14 new research projects into air pollution problems. This follows a $295,367 allotment of last October which was spread among 10 projects.
- The agency also pressed forward talks with state and city health officers looking toward helping Hartford, Conn., with its pollution problem. USPHS has offered to assign two of its engineers fulltime to Connecticut's Health Department for work on Hartford's air pollution.

This deal would be the second of its kind undertaken since Congress gave birth to an enlarged federal-aid program last summer. USPHS already has allotted $90,000 this year to Louisville, Ky., and has promised $90,000 more for next year.

S & M Construction Company, Providence, R. I., uses 12 of these Mack LJSWX diesel dumpers under 2-yard Lorain shovel in excavating peat bog near Atholl, Mass., on a by-pass for U. S. Route 20.

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It's Mack's famous Balanced Bogie, along with Mack's exclusive Power Divider, that makes seemingly impossible tasks like this everyday assignments for Macks. This wonder-working team delivers torque to each wheel in proportion to its traction. In addition, it assures uniform tire loading and braking on all four rear wheels, and maximum stability under any terrain or road conditions.

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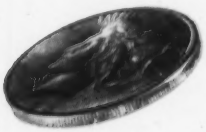

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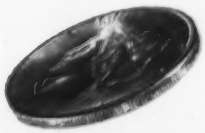
Athey-Cat Tractor-Trailer maneuverability means faster cycles, higher production and bigger profits. Articulated "universal joint" design of all Athey-Cat units gives maneuverability impossible in rigid frame trucks. With the Athey PR21, shown here, you get under the shovel quicker, work faster in tight, narrow quarters, take sharper turns at higher, safer speeds and get in . . . dump . . . and get off the fill in shorter time.



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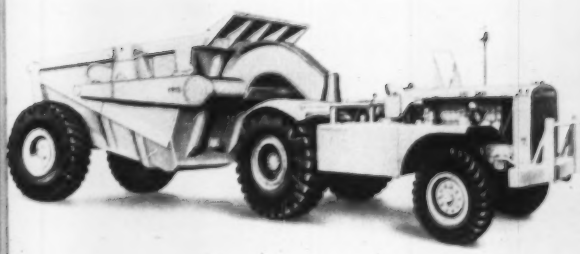
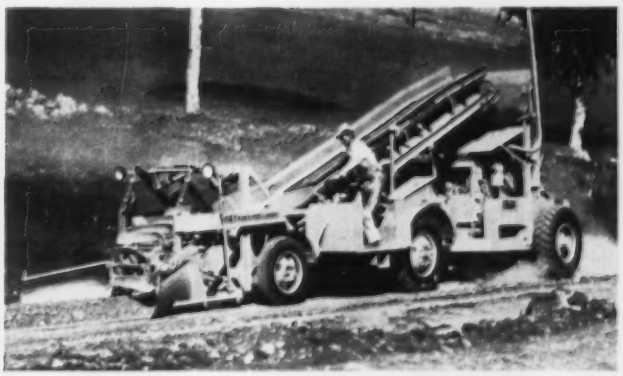
FASTER LOADING, LESS SPOTTING TIME

Patented, full-floating feeder of the Athey 125 HiLoader digs into stockpile or windrow, loads wide variety of material. Swiveling conveyor loads trucks at left, right or behind . . . saves spotting time, cuts delays. Loads 10 to 25 cubic yards of material per minute.



TOP SPEED AND MANEUVERABILITY

Newest of the Athey-Cat Tractor-Trailer units is the fast PR15-DW15 Rear Dump Team. More maneuverable than a pick-up, the 22-ton capacity PR15 is easy to spot in seconds under shovels, in tunnels and other areas "off-limits" to conventional haulers. Cuts cycle time with higher speeds, fast 12-second dumping.



30% TO 60% SAVINGS REBUILDING ROADS

Bid road rebuilding jobs low and show a good profit. Money-making companion for the Athey Force-Feed Loader, the Athey Portable Breaker reduces old aggregate to desired size at a rate of up to 200 tons per hour . . . saves up to 60% over old methods of reclaiming roads.

ATHEY PRODUCTS CORPORATION, 5631 West 65th Street, Chicago 38, Illinois

There was plenty of snow, and it was colder than normal, but on most of the power and navigation projects . . .

St. Lawrence Constructors Defied

They finished a bridge, started a dam, and at the Canadian shore began work on the powerhouse. And practically everywhere in the area of the St. Lawrence power and Seaway projects, excavation continued throughout the entire winter.

It was a colder-than-normal winter, but despite a claim that worker efficiency dropped 60% in the bad weather, much was accomplished before the real construction season opened up this week (p. 23).

The only big concessions to winter were on Long Sault Dam, where concreting stopped, and on the U. S. half of Barnhart Island Powerhouse, where it was held off until this week.

• **A good winter** – Ontario Hydro called it a good winter: Cold enough, early enough to get the contractors used to it, with a good late blizzard in March to let them know it wasn't over.

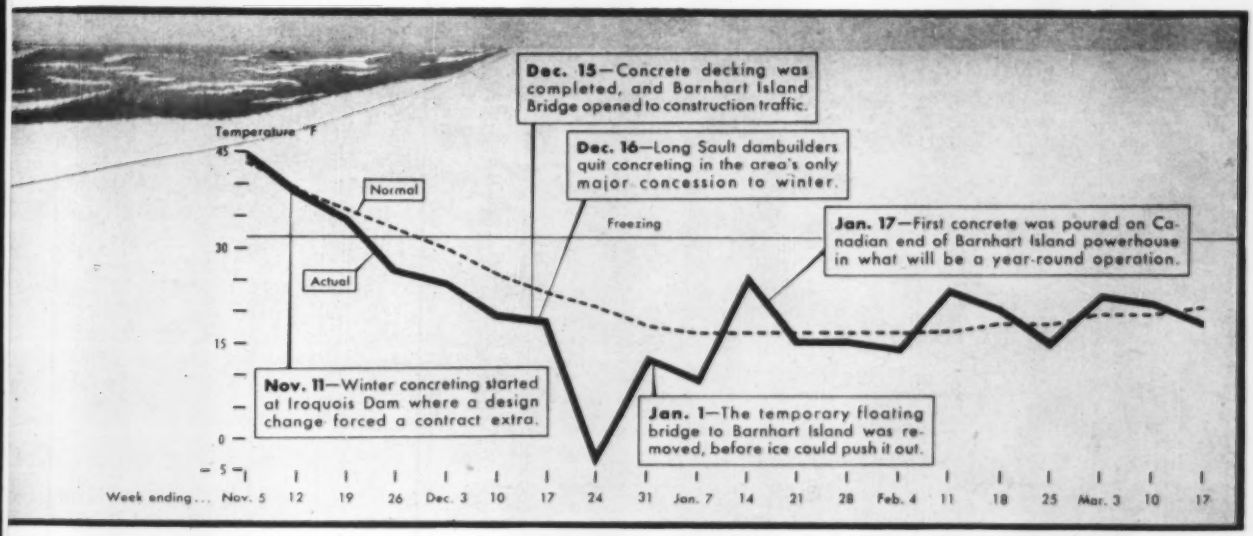
Iroquois Constructors (a Canadian combine) began concreting on its $21.9-million Canadian powerhouse contract, and won't stop until it is all finished. Ontario Hydro makes a specialty of winter concreting.

Canadian concrete specialists have taken away the steam coil space-heaters and stripped pours in less than 10 days in all but the worst weather. Thermocouples in concrete convinced Ontario Hydro that its heat of hydration kept it warm enough. Steam was used to heat sand in stockpiles; and all aggregate in bins, as well as water for the mix, was warmed.

• **Premium job**—The biggest yardage of winter concrete in the International Rapids area was more than 20,000 cu yd placed on Iroquois Dam for the Power Authority of the State of New York. The contracting com-

IN THE DEAD OF WINTER Ontario Hydro's contractor steam-cleaned the rock at the Canadian end of the powerhouse and began pouring concrete. It was Jan. 17.

7-FT LIFTS (low lifts for an Ontario Hydro job) were steam heated under tarps.


Dec. 15—Concrete decking was completed, and Barnhart Island Bridge opened to construction traffic.
Dec. 16—Long Sault dambuilders quit concreting in the area's only major concession to winter.
Jan. 17—First concrete was poured on Canadian end of Barnhart Island powerhouse in what will be a year-round operation.
Jan. 1—The temporary floating bridge to Barnhart Island was removed, before ice could push it out.
Nov. 11—Winter concreting started at Iroquois Dam where a design change forced a contract extra.
Temperature °F
45
30
15
0
− 5
Normal
Actual
Freezing
Week ending... Nov. 5 12 19 26 Dec. 3 10 17 24 31 Jan. 7 14 21 28 Feb. 4 11 18 25 Mar. 3 10 17

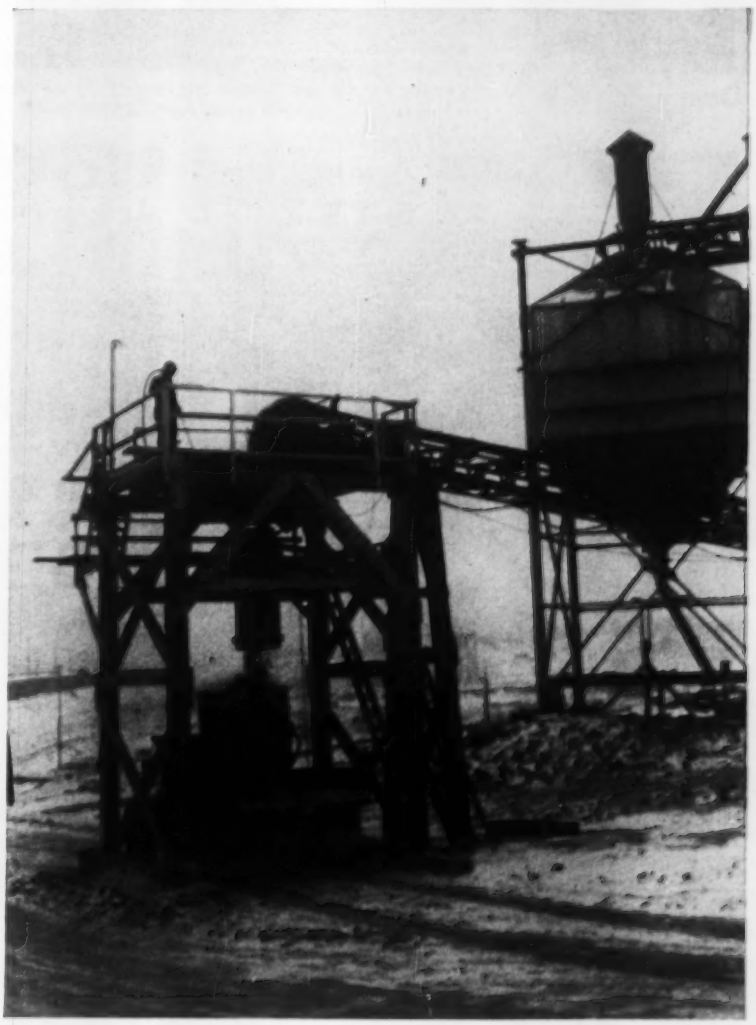
the Winter

bine there is Kiewit-Johnson-Johnson.

A design change adding a downstream apron to this low-head dam caused concreting to be carried through the winter. The contractor developed an elaborate protective housing for the work and used dry-air heaters to warm it. Care was taken to keep the curing concrete sprayed lest it dry out in front of the powerful heater fans.

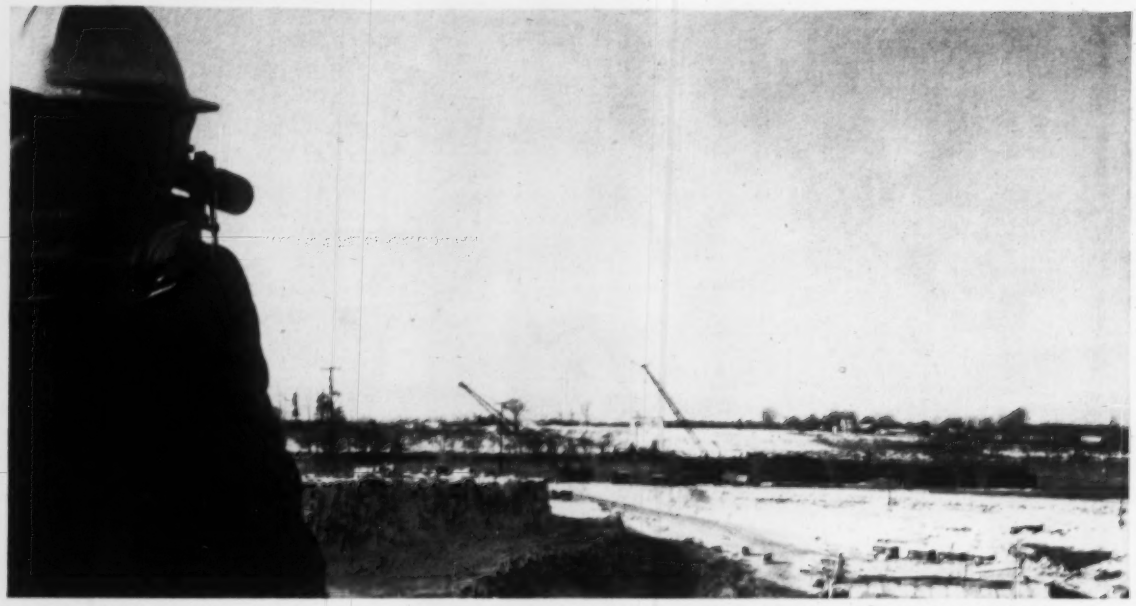
The 50 F temperature for the concrete was ideal; it was not desirable to heat it any more, the protection given it while curing was so good. A pour was made every 72 hours, if pos-

Specs require that concrete be kept above 50F for 3 days, above freezing 10 days.

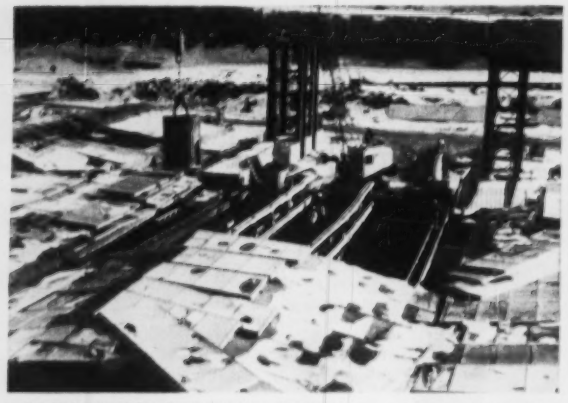


BELT-CONVEYED CONCRETE was trucked to pour while longer conveyor to the dam was built. From a 500-cu yd winter rate, plant will go to 2,000 cu yd per day.

. . . Winter on the St. Lawrence



Dambuilding cold weather concreting at Iroquois Dam was required by a design change, an added apron. Contractor got an incentive rate on all yardage poured before April 1, went under cover of costly but clever winter protection.



COMPLETELY COVERED POURS meant lots of handling of protection, which was 12x20-ft panels, canvas or paperboard.

IT'S WARM INSIDE. Propane gas heaters (arrow) are rated by manufacturer (Behlen) at 4,000,000 BTU's per hour.

EVEN THE OPEN AIR IS WARMED by the heaters as concrete is placed. Sheet-pile steel, blocked and bolted in 100-ft lengths, carries roof over area of dam apron pours.

sible. It was sometimes impossible to move forms that regularly—too cold to remove the protective housing.

• **Permanent bridge done**—The floating bridge to Barnhart Island was to be taken out of use Dec. 15, and the permanent Barnhart Island Bridge was opened to traffic precisely then.

A. S. Wikstrom, Inc., did the bridge foundations and Mt. Vernam Bridge did its superstructure. The subcontractor on the concrete roadway, asked an extra on the work when forced to do it in the cold of late fall. Instead consultants Praeger-Kavanagh kept track of actual costs for him and found that he did the job within contract price in spite of the necessary cold weather measures.

• **And lots of digging**—Everywhere

OFFSET WING DESIGN
DEEP SLOTTED CHIP-WAYS
PRECISION MILLED THREADS
CONCENTRIC PRECISION MILLED SEATING SURFACE
IMPROVED BRAZING TECHNIQUE
MACHINED FROM SPECIAL ALLOY STEEL
CHOICE OF TWO GRADES OF TUNGSTEN CARBIDE

Only JOY Tungsten Carbide ROCK BITS offer all these features

The results of improved manufacturing techniques

OFFSET DESIGN OF WINGS for drag-free rotation, faster removal of cuttings to permit faster drilling, easy and inexpensive reconditioning.

DEEP SLOTTED CHIP-WAYS allow cuttings to escape readily; the bit does not regrind its own cuttings.

IMPROVED TECHNIQUE FOR BRAZING INSERTS to prevent loss of inserts and to assure maximum drill footage and minimum loss of gauge.

MACHINED FROM SPECIAL ALLOY STEEL and heat treated by an exclusive process to provide high fatigue life and maximum shock resistance. This feature makes the Joy Tungsten Carbide Bit *best for any rock formation.*

CHOICE OF TWO GRADES OF TUNGSTEN CARBIDE—a hard grade for abrasive formations and a medium grade for harder formations.

PRECISION MILLED THREADS insure dimensional uniformity, positive rotation and uniform thread tolerances.

CONCENTRIC PRECISION MILLED SEATING SURFACE permits full contact of bit threads and rod threads. The bit seats firmly against the drill rod upset, radial play is prevented and life of threads and rods is lengthened.

Joy Tungsten Carbide Rock Bits are available in the following gauge sizes:

CROSS TYPE, JHO—1½", 1⅝", 1¾", 1⅞", 2"
CROSS TYPE, JDO—1⅞", 2", 2⅛", 2¼", 2⅜", 2½", 2¾", 3"
X TYPE, JX—3½", 4", 4½"

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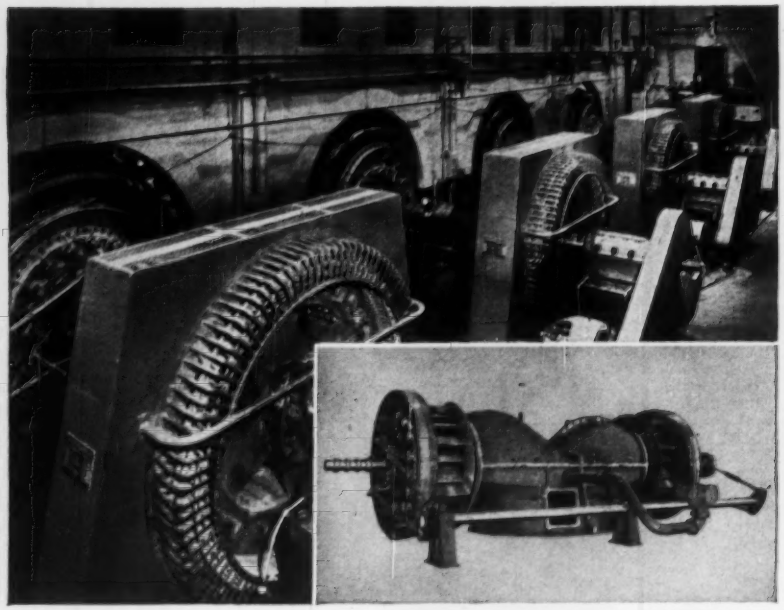
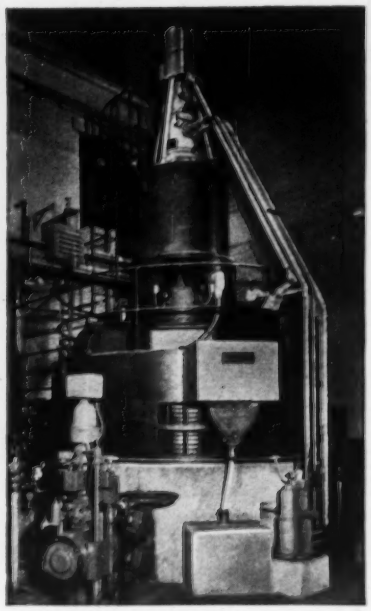
FOR OVER HALF A CENTURY



Horizontal generating units are each driven by a pair of modernized SMS-Francis turbines shown (inset) during shop assembly.



At remote end of the power house, a vertical SMS-Kaplan unit, mounted in a concrete pressure flume provides flexibility of operation.

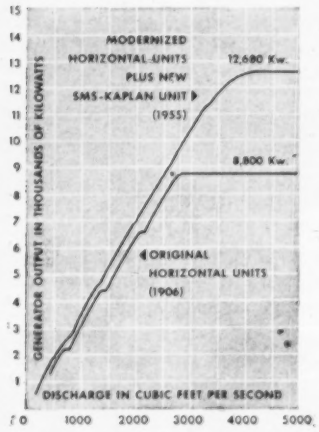
Consulting Engineers: Pioneer Service and Engineering Co., Chicago, Ill.

MINNESOTA HYDRO-PLANT WITH SMS TURBINE MODERNIZATION BOOSTS OUTPUT 35%

By completely modernizing a half-century-old horizontal turbine installation having the inside type of gate mechanism, the Upper Midwest's largest utility has raised the potential KWH output over 35%. This resulted from increased plant efficiency and greater installed capacity. The rebuilding program was a result of careful engineering studies made over several years by SMS in cooperation with the utility and their consultants with whom the purchase of modernized horizontal turbines was finally negotiated.

Four pair of horizontal SMS-Francis wheels with motor operated outside gate mechanisms were mounted on new 9-foot draft chests in the existing 14-foot diameter top supply pressure cases. An additional SMS-Kaplan turbine, rated at 3,500 HP under the 48-foot head, was added to provide flexibility and take load variations at a high efficiency over a wide operating range.

Whether your interest is modernization or a new station, you can rely on the broad engineering background of 80 years' experience available to you at SMS. For information on hydraulic turbines and accessories, write S. Morgan Smith Co., York, Penna.



Performance of modernized units based on index tests run in January 1956. Performance of original units based on guarantees when new.

S. MORGAN SMITH

AFFILIATE: S. MORGAN SMITH, CANADA, LIMITED, TORONTO

HYDRAULIC TURBINES
PUMPS
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HYDRODYNAMICS
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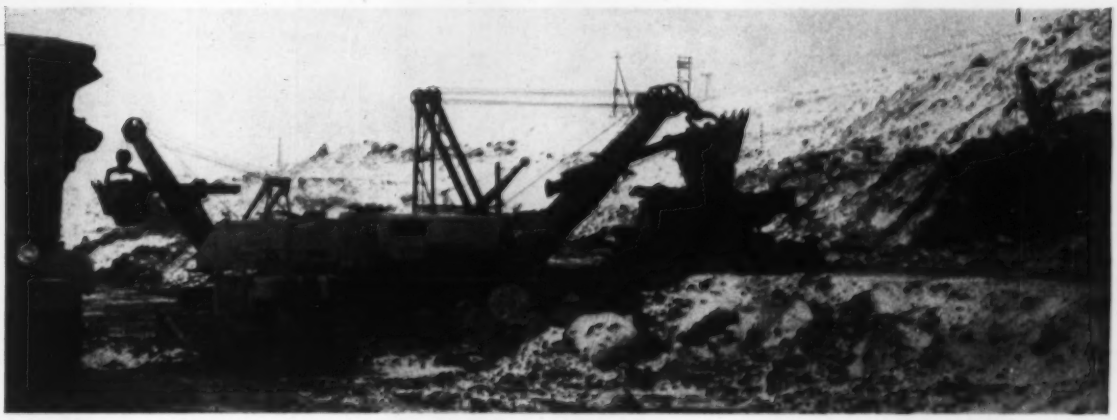
BALL VALVES
BUTTERFLY VALVES
FREE DISCHARGE VALVES
CONTROLLABLE-PITCH SHIP PROPELLERS

Bridge decking. The contractor couldn't start Barnhart Island Bridge roadway until cold had set in. Warmed concrete was placed and insulated with two layers of fiber-board, hay and tarpaulins. Bridge opened on time.



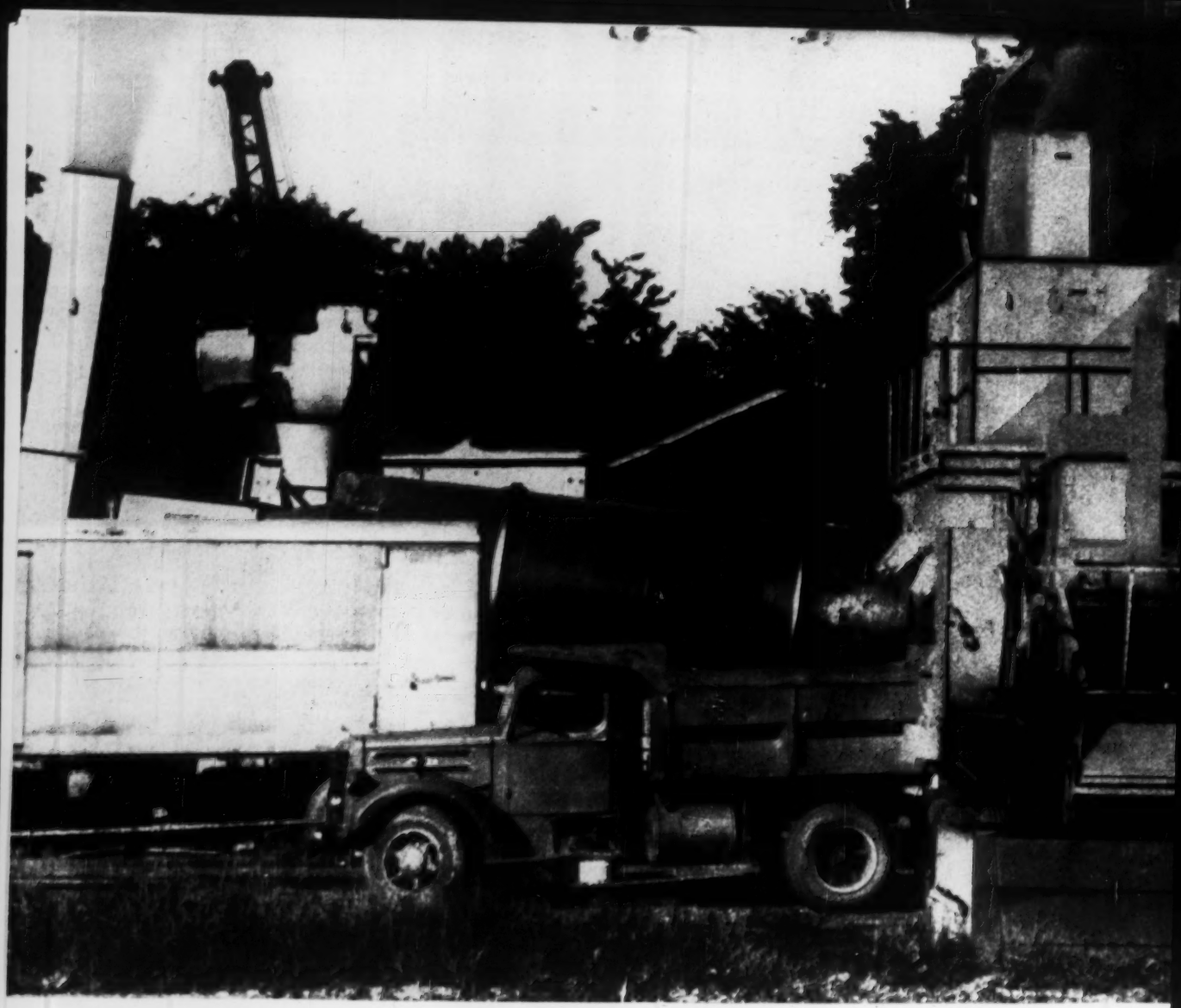
Excavation. Winter made the area's marine clay solid and about half as hard to handle. It also firmed up the haul roads. But it didn't ease digging in this heavy glacial till at Robinson Bay Lock, where one contractor had gone broke.

on both power and Seaway work, excavation went on all winter. The St. Lawrence Seaway Development Corp. —with the Corps of Engineers as its agent—pushed excavation for both its locks. At Grasse River Lock, Dutcher Construction Corp. found the going easier as the marine clay froze.

At Robinson Bay Lock the heavy glacial till had to be shot before being shoveled as The Tecon Corp. dug valiantly in the hole that had been too much for Jack & Jim Maser, Inc., in its original scraper-attack.

All in all, it was a rugged winter, but construction went on in spite of it. The photos that tell the story are by ENR, Power Authority of the State of New York and Ontario Hydro.

TRUCKS FREEZE FULL—Each haul's payload was smaller until finally backhoe or shovel had to clean out frozen material. Oiling and heating truck beds helped.



Portable plant produces hot-mix at 175 tph clip from wet river gravel

TAKES ONLY 1.8 GALLONS OF FUEL TO DRY A TON OF WET MATERIAL

Fuel consumption of 1.8 gallons per ton while drying *wet river gravel* to produce a high type hot-mix at a 175 tph clip is outstanding performance in any contractor's language.

That was the record compiled by this PIONEER *Continuflo* Model 102 Asphalt Plant between Belleville and Ravenswood, West Virginia, where Route 2 hugs the Ohio River.

Gravel for the job was scooped up from the river bottom by a modern floating dredge. It was still saturated with Ohio River water when delivered to the plant.

The happy contractor was Tri-State Asphalt Corporation of Martins Ferry, Ohio.

Tri-State already owned 8 stationary or semi-stationary mixing plants, but needed a high-tonnage, highly mobile plant to help it maintain a competitive advantage in the 5-state area of Ohio, Pennsylvania, West Virginia, Maryland, and Kentucky where it regularly operated.

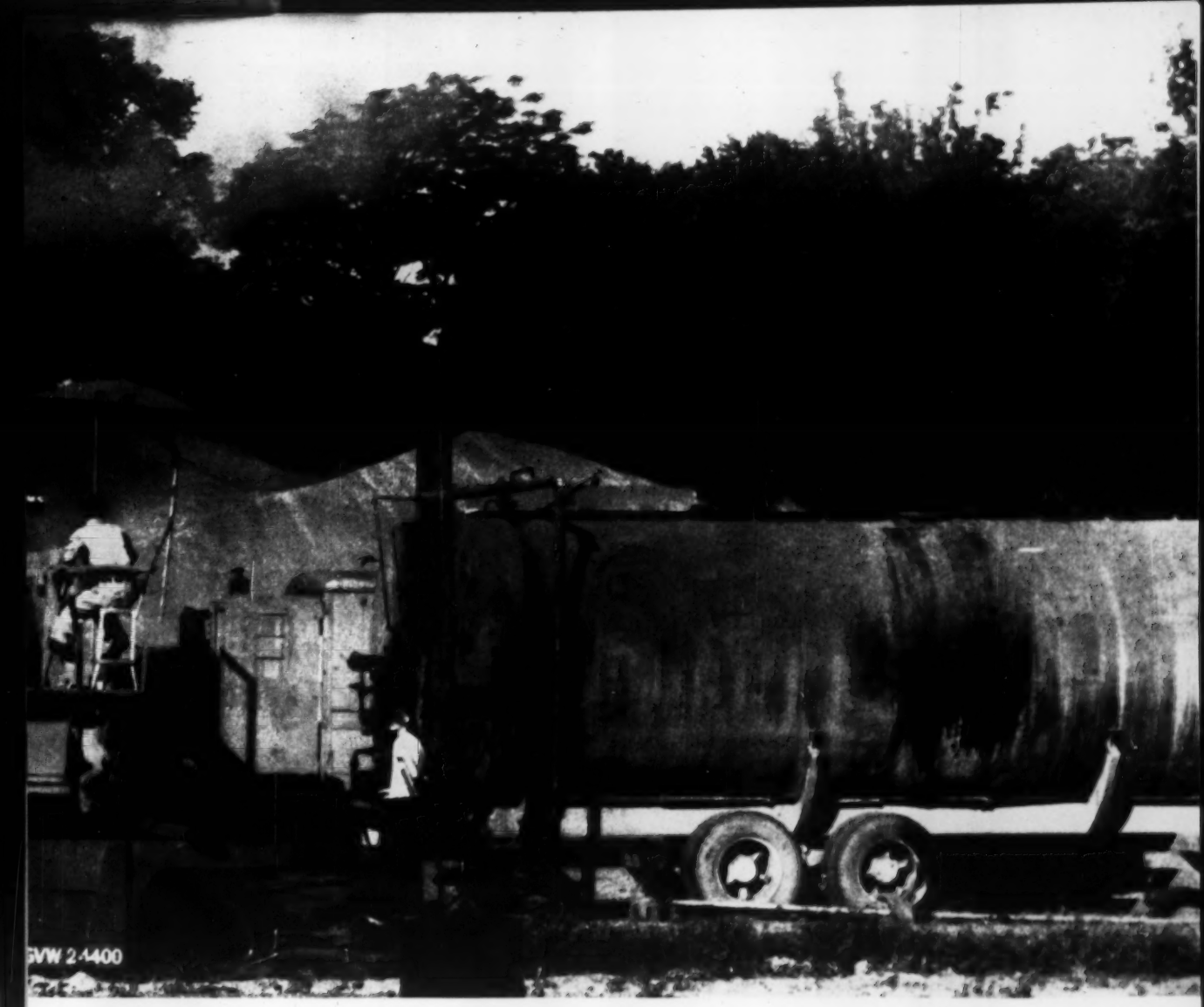
Highly Mobile

It was after placing its order for the new PIONEER Model 102 *Continuflo* Plant that Tri-State submitted the low bid on the 50,000 ton Route 2 paving job mentioned above.

Its exceptional mobility was one of the features which influenced Tri-State in selecting a *Continuflo* Plant. *There are only 2 units to move.* The combination drier and dust collector is mounted on one rubber-tired chassis; the combination gradation-mixing unit is on another. No extra piping or breeching is needed to connect dust collector with drier. It's a simple matter to pull in, hook up, lay pipes, and go to work.

Economical, too

One of the reasons Tri-State's *Continuflo* Drying Unit requires so little fuel and power is that the direct,



straight-line connection between drier and dust collector offers less resistance to air flow than old-fashioned plants with their multi-bend piping and breeching. Less heat is wasted, and since more heated air is pulled through the drier for each hp input to the induction fan, less power is needed to do the job.

Another major saving is made possible by the high efficiency of PIONEER'S multi-clone dust collector which saves on the cost of mineral filler by recovering up to 20 tons of needed fines per hour and feeding them back into the mixer.

4-Compartment Bin

Another feature of the 102 Plant which had helped influence Tri-State was the fact that it offered a 4-compartment bin.

Specifications of both the Ohio and Pennsylvania Highway Departments call for 4-bin separation of bituminous mix aggregates, and even where this is not required, the high output of the 102 Plant puts Tri-State in an advantageous position when bidding is close.

Accurate Proportioning

Three other important *Continuflo* advantages make it easy to maintain near-perfect uniformity of mix to meet even the most exacting specifications.

FIRST . . . gradation bin gates are calibrated to make it easy to proportion dry aggregate.

SECOND . . . hot, dry aggregates are mixed before bitumen is added.

THIRD . . . aggregates feeder and bitumen pump drives are *mechanically interlocked* to maintain correct proportioning.

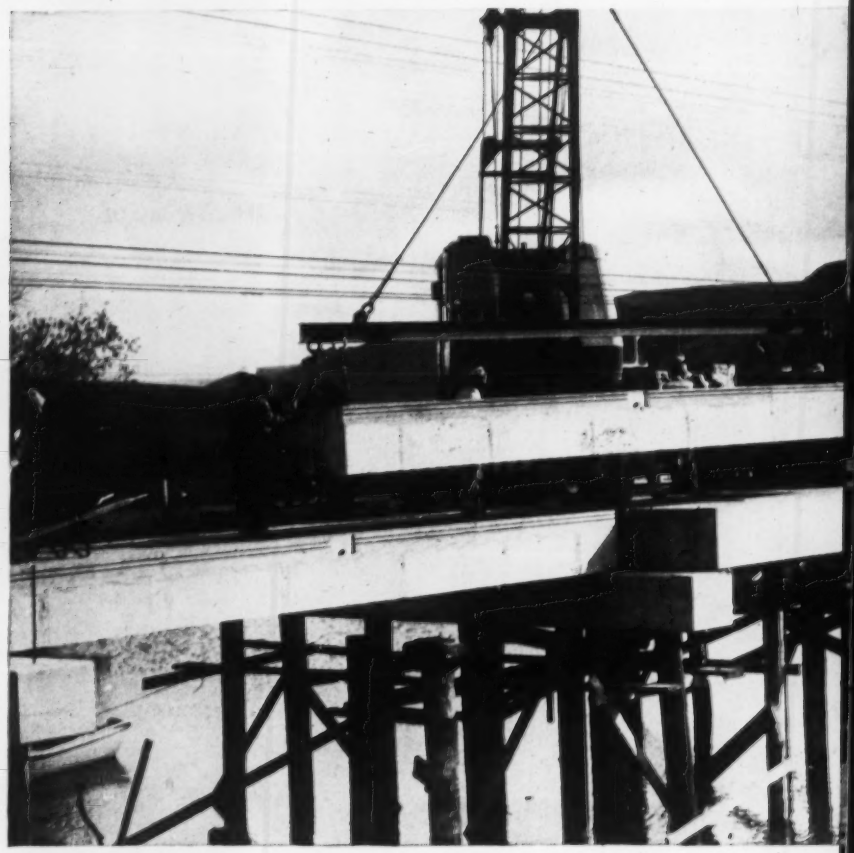
A specially designed double gate on the truck-loading hopper reduces segregation to a minimum and quick-acting controls give the operator instant and positive command over all mixing functions.

The Model 102 *Continuflo* Plant is available with diesel, diesel-electric, or all-electric power. All-electric plants are controlled from a central push-button panel.

For more information on the 102 or other PIONEER *Continuflo* Bituminous Plants, write Pioneer Engineering Works, Inc., Minneapolis, Minnesota (a subsidiary of Poor & Company, Chicago) or see your nearest PIONEER Distributor.

Pioneer *Continuflo* **EQUIPMENT**

For fast erection, a bridge in San Diego was built of precast concrete—but its components are unusual. They are prestressed stringers integrated, at the plant, with reinforced deck slabs.



Built-Up Concrete Channels Form

Robert C. Dorland
Manager,
Southwest Structural Concrete Corp.,
San Diego, Calif.

Built-up concrete channels, combining prestressed flanges and a cast-in-place web, made possible swift erection of a six-span bridge in the San Diego, Calif., area. These sections served as both deck and stringers for the superstructure, which was supported on wood piles.

Called the Los Penasquitos Creek Bridge, the six-span structure has a total length of 163 ft 6 in. and rests on seven bents of 6 piles each. The spans are 28 ft 6 in., except at the ends where they are 23 ft 6 in.

Bridge decking and stringers consist of precast concrete channel units. These are built up of two pretensioned ribs (5,000-psi concrete) joined by a reinforced concrete slab (3,000-psi) to form one composite section. The subcontractor on prestressed concrete chose to use a composite section rather than a completely prestressed channel, because preliminary designs showed a savings in formwork.

The pretensioned ribs were cast flat on standard soffit forms. Stirrups and dowel reinforcing were added following initial tensioning of the ⅜-in., 7-wire strand to 175,000 psi. The concrete was cured and stripped at 3,000 psi. Bolt holes at about 6 ft c-c were left in both ribs and slabs to avoid having to drill for bridge rail erection.

• **Anchorage by crimped clips**—Certain economies were possible in the pretensioning operation due to positive end anchorage of the strands. The specifications called for creep, shrinkage and elastic-deformation allowance based on an anchorage efficiency of 100% by test. Mild steel clips, crimped on the wire, provided anchorage equal to the ultimate strength of the wire in meeting this requirement.

The technique of crimping mild steel on high-tensile steel evolved locally through trial and error in die design, forming-press design and operation, and assembly-line plant operations.

Developed by the author, the anchorages have been used on other San Diego work as well. They have been applied to solid ⅜-in.-dia spring steel, and on ½-in. strand. Making it possible to anchor tendons any place in a pretensioned beam, they provide a means of varying the prestress. Researchers have reached the ultimate strength of strands up to ½-in.-dia in pullout tests. For the Los Penasquitos bridge, positive end anchorage of all the steel eliminated the question of shears due to localized live-load concentration.

Each finished channel weighed about 10 tons. Channels had four lifting inserts for handling and were stacked two per load on low-bed trailers and transported to the job.

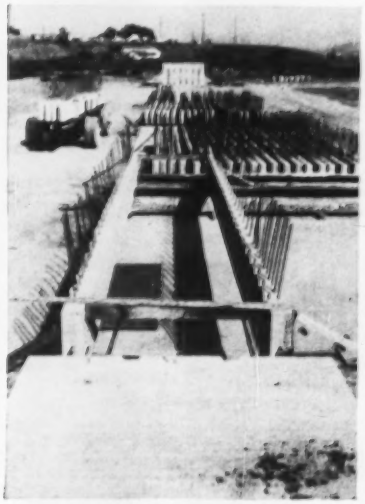
• **No storing units at site**—Starting at one end abutment, erection of the six bays proceeded to the other end, with each newly-spanned bay carrying the construction loads for all that followed it. The crane picked each channel from the trailer according to a plan that eliminated job storage of the units.

No deflection of individual channels was observed during erection—even in one instance where wheel and out-

Bridge Deck

Underside of completed bridge shows 28½-ft channel slabs resting on pile caps. Posts for bridge railings are bolted through holes left in the stringers at time of casting.

Mild Steel Clips, crimped onto the wire, provide anchorage equal to the tendons' ultimate strength. These offer a means of varying prestress.



Pretensioned Ribs are plumbed on edge in pairs prior to casting the top slab. Stringers are denticulated and dowelled to provide a shear lock.

Top Slab, 5½ in. thick, is concreted from truck mixer. Three dowels protrude from the end to provide a tie after the channel is erected.

Scraper Storage Machines consist of these essentials:

(1) a hoist with power unit, either electric, diesel or gasoline.

(2) the Crescent Scraper Bucket.

(3) the operating cables and guide blocks.

(4) a method of shifting.

(The above installation uses a monorail and tail trolley system to shift the Crescent to another part of the building.)

A Sauerman Roller-Bearing Hoist can be placed almost anywhere inside the storage building or outside. Crescent Scrapers handle any bulk material at rates ranging from 20 to 600 cu. yds. per hour.

Various methods of shifting can be used, including the use of a third hoist drum or a separate shifting winch. Both of these methods give automatic control from the operator's station, with no personnel entering the storage area. One man controlling one machine, stores or reclaims at the lowest cost for labor and maintenance.

For ways to reduce your material handling costs, write to Sauerman's experienced engineers. Request Catalog E, *Bulk Storage by Scraper* and pertinent Field Reports on the handling of your material by Sauerman Machines.

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632 S. 28th AVE. BELLWOOD, ILLINOIS

rigger loads of crane and trailer were on the same panel midway between bents. The mix for longitudinal grouting and casting transverse joints was chuted from a truck-mixer. Subsequently, each span was laterally post-tensioned by threaded rods that were then pressure grouted.

The work was done by Johnson Western Constructors, Coronado, Calif., who were successful bidders on the base bid (timber superstructure) at $43,800, on alternate # 1, (steel girders) at $48,800, and on alternate # 2 (prestressed concrete decking) at $48,800. The City of San Diego elected the prestressed alternate.

The superstructure itself represents about two-thirds of the contract price, and the differential between the bid alternate in this case is about 11%, compared to the base bid in wood.

A. K. Fogg was city engineer and Joseph H. Kershaw, design engineer for the City of San Diego. Carl Copeland is district manager for Johnson Western Constructors, the contractor. Consultant on prestressed design is T. Y. Lin & Assoc., Los Angeles, with the prestressed concrete construction handled by Southwest Structural Concrete Corp., San Diego.

N. M.—Pacific Northwest Pipeline Passes Halfway Point

With more than half of the 1,487-mi line already in the ground, contractors are pushing hard to finish a natural gas pipeline, from New Mexico to the Pacific Northwest, in time for gas deliveries this summer.

More than 750 mi of 26- and 22-in. steel pipe are already laid from San Juan Basin near Ignacio, N. M., to a point near Kennewick, Wash., where the line will split into three parts, stretching to Wenatchee, Wash., and points near the Canadian border. Portland, Ore., Seattle, Spokane, and Tacoma, Wash., will be among the major communities served.

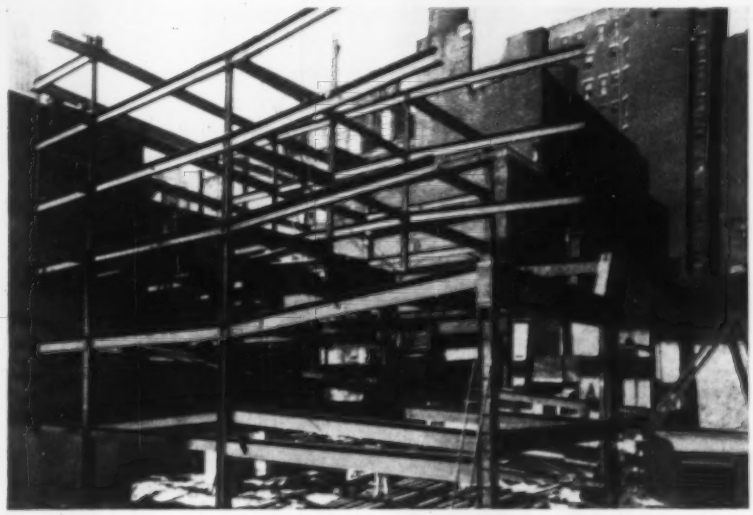
The line is being built by Fish Northwest Constructors, Inc., for Pacific Northwest Pipeline Corp. Eventually, the lines will cross the border into Canada, resulting in a two-way feeder system from fields in Alberta and British Columbia, as well as New Mexico.

Delaware Plans Bridge Link

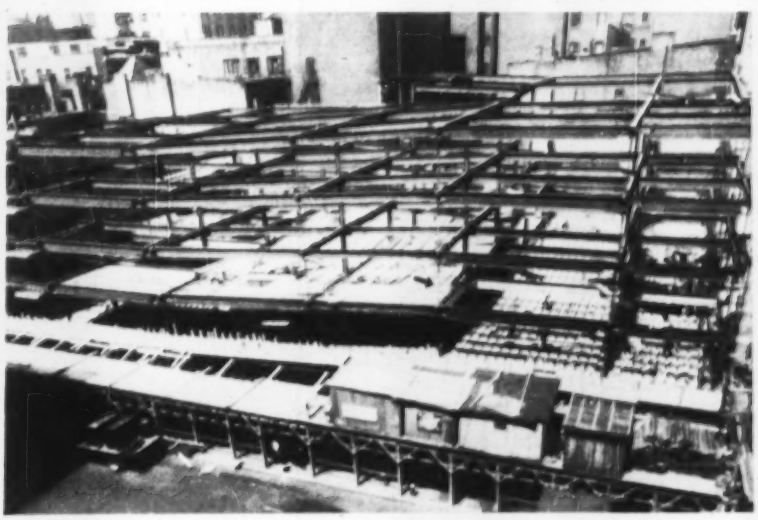
Announcement was made recently by William J. Miller, Delaware State Highway Dept., that a proposed four-lane, high-level bridge crossing of the Chesapeake and Delaware River Canal will be the major feature in a new system of highways planned to connect with existing or proposed Maryland expressways.

Combined skeleton framing and bearing walls are a challenge to any steel erector. In this New York City garage the problem was complicated by pitched framing and continuous welded girders.

A New Slant to Parking Garages



STEEL FRAMING cantilevers 28 ft during erection of a welded parking garage. Splices in continuous girders were located at inflection points. Bent-up 36-in. wide-flange girder (right) serves as transition from three columns below, to five columns above.



SLOPING STEELWORK defines pitch of garage floor, which climbs at 5% grade. Arrow shows 2½-in.-dia pipe struts used to carry weight of outside steel framing prior to erecting outside bearing walls. Floor-to-floor height is 9 ft. 1 in.

To the casual observer, there appears to be nothing unusual about a new parking garage on the southwest corner of 45th St. and Avenue of the Americas in New York City. But the inquisitive engineer has only to scratch the surface of this building and he will find a host of structural oddities.

To begin with, no one material is responsible for its structural stability. The framework is steel, the bearing walls are brick, and the beam and slab floor system is concrete.

The structural frame is welded. The girders were designed to be continuous to keep down the center-span moments. This results in another unusual feature—the columns terminate at the girders, rather than the girders framing into the columns.

Each parking floor of the five-story building slopes at a 5% grade around the periphery of the 100 x 150-ft building. These floors were designed as a two-way reinforced concrete slab and beam system, with filler blocks.

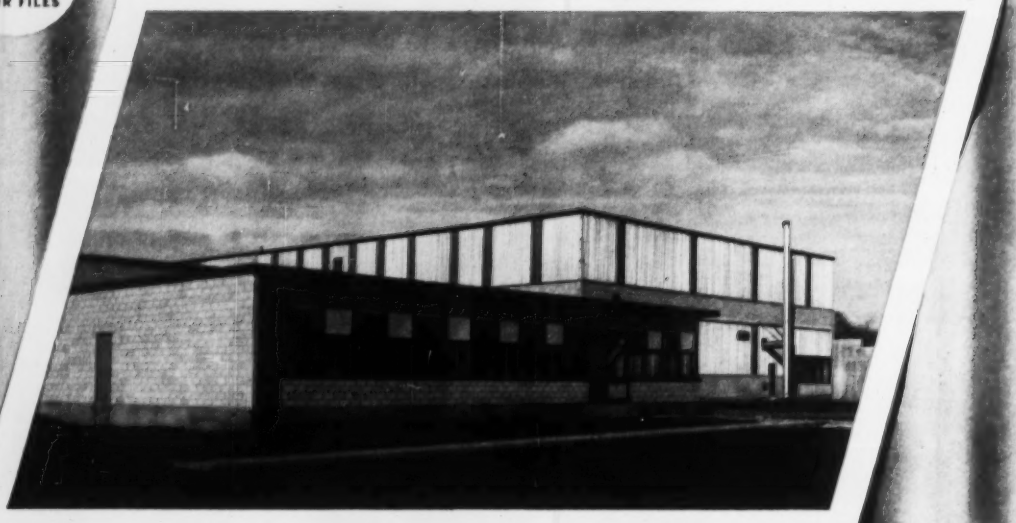
The exterior walls were a feature of the building that posed an interesting field problem during construction. These bearing walls were designed to carry the reaction from the steel framing. However, they could not be built until after the steel was erected. This meant that the outer ends of steel beams had to be temporarily supported until the masonry wall was built.

The problem was solved by using 2½-in.-dia pipe struts to carry the weight of the steel to the ground. However, these struts were later supplemented by 8 x 8-in. and 10 x 10-in. wood shores to take the load of the beam and slab floor.

Architects-engineers for the unusual building are Charles N. & Selig Whinston of New York City. Owner is Henry Goelet who also served as general contractor. Structural steel is by Ingalls Iron Works. Cost of the building is $750,000. Gilbert D. Fish acted as welding consultant.

ONE OF A SERIES OF IDEAS FOR YOUR FILES

ANOTHER NEW IDEA...



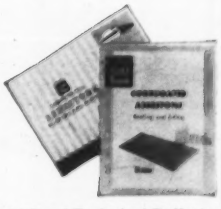
WITH CORRUGATED ASBESTONE

Gold Bond Corrugated Asbestone applied on this building by Asbestos Corrugated Construction Company, Somerville, N. J.

Gold Bond Corrugated Asbestone and translucent panels add practical beauty to new plant

Upper sidewalls of this paint plant are decorative *and* useful. Panels of Gold Bond CORRUGATED ASBESTONE "400" interspersed with plastic fenestration having a common corrugated design, blend together to accentuate the lights and shadows of the exterior design. This also provides light for the building interior. Rock-like CORRUGATED ASBESTONE stands up against corrosion and weather without ever requiring maintenance during the lifetime of the building. Its use with other building materials is limitless.

How many uses can you think of for fireproof Gold Bond CORRUGATED ASBESTONE? Whether it's in remodeling or new construction, commercial or industrial, ASBESTONE creates striking good looks and permanence—means added strength and lower maintenance. Write for full details on this versatile, good looking material. Address Dept. EN-46, National Gypsum Company, P. O. Box 5257-B, New Orleans 15, La.



Gold Bond Technical Bulletin No. 2032 and Gold Bond ASBESTONE Application Book give full specifications and uses of Gold Bond Corrugated Asbestone Products.

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ENR Staff Photo

ALUMINUM SHEATHED MULTI-STORY BUILDING on a dam construction job high in the Alps of Switzerland introduces . . .

Something New in Bunkhouses

Because the construction period for Switzerland's Grande Dixence Dam is so long, the Alpine site so remote, (El 6,900 ft), and the weather so disagreeable, good living quarters were required for the workmen on this notable structure, which will be more than 200 ft higher than Hoover Dam (ENR Dec. 3, 1953, p. 32). The solution is unique among construction jobs because the main building is a nine-story apartment structure, which is additionally interesting because it is framed with 470 tons of welded structural steel and sheathed in aluminum.

Although reasonably comfortable quarters had been provided in insulated wooden huts at two earlier camps on the job, it was deemed desirable, and almost as economical, to construct a permanent type building when the camp for the concrete workers was being laid out. Less utility line construction was required, and maintenance charges were considerably lower. Also, the 540 cu ft of air per workman, which local labor laws require, could be assured more economically in a tier-type building than in separate huts. The necessity for providing recreation rooms, a movie theater and large dining facilities could also be met more economically in a single large building. The choice of walls faced with aluminum was based on their lightweight, which reduced the building loads and furnished units easy to transport and erect.

The apartment bunkhouse is 43 x 165 ft in plan and 90 ft high. In addition to its arc-welded steel frame and aluminum walls, it has double-glazed aluminum window frames and sliding aluminum shutters. The floors are of light-weight hollow concrete units covered with asphalt tile, and the roof is of wood covered with aluminum. The roof is pitched toward the center so that snow will not slide off and injure people below.

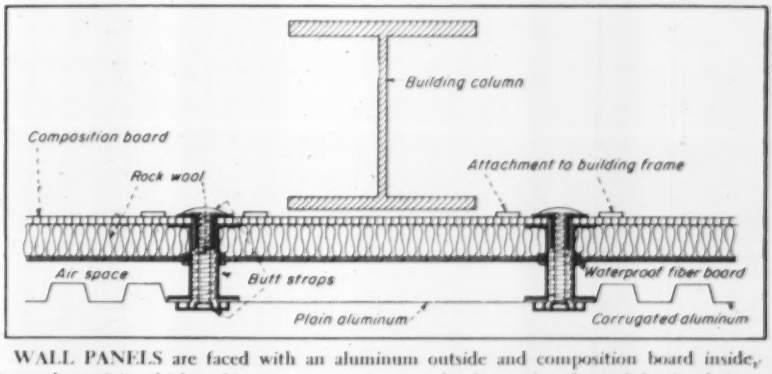
Except for the first two stories, which are enclosed in precast concrete panels, installed before winter set in and before the aluminum panels arrived, the entire building is sheathed in aluminum. The main wall panels, mostly 9 x 15 ft in size and containing two windows each, have a corrugated surface, but between them, at each column line and along the spandrels, plain surface aluminum strips, 17 in. wide, are used to provide a contrast and a distinctive architectural appearance.

The wall panels, weighing 4.8 lb per sq ft minus the glass, came to the job ready to install. They consist of a light steel frame to which the aluminum sheets are attached on the outside, with a hard composition board opposite to provide the finished interior wall surface. The space between the two coverings accommodates a layer of rock wool, held against the inner surface by a waterproof fiber board, and an air space next to the exterior aluminum. The aluminum is attached to the steel frame of the panels by screws, the holes in the aluminum being larger than the screws to eliminate the possibility of the aluminum buckling under temperature movements. Large washers keep the screw heads from pulling through these large holes.

A single guy derrick installed on an adjacent ledge of rock at about mid-height of the building (at right in above photo) erected the entire frame and all of the aluminum panels. It could reach across the full width of the building and from bottom to top, but had to be moved three times to cover the entire length.

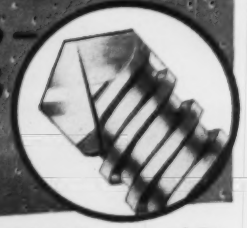
When erecting the panels the derrick set them on a ¾-in. thick waterproof bituminous paper at the bottom and against a layer of rock wool at the top, the latter to permit ample temperature movement vertically because of the different expansion coefficients of aluminum and steel.

Horizontal movements are taken



WALL PANELS are faced with an aluminum outside and composition board inside, are about 4 in. thick and contain an air space and a layer of rock wool for insulation.

IN MASONRY BITS — the TIP'S the THING!



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CARBIDE-TIPPED
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THE WORLD'S ONLY COMPLETE LINE OF Carbide-Tipped MASONRY BITS

YOU NEED THE RIGHT Carbide-Tipped BIT FOR EACH DRILLING JOB!

Don't try to use an ordinary bit to do the tough drilling jobs that only New England Carbide-Tipped MASONRY BITS can handle. And — don't use the wrong type when only the right type will do. Equip with the complete New England line — and eliminate wasted labor — slow, costly work — bit breakage — and disappearing profits. Start using the line made of heat-treated alloy steel, with the super-sharp carbide tips and tip-to-shank flutes that assure positive dust removal.

Cyclo-twist®
ROTARY BITS
For ROTARY DRILLING of Medium Masonry — Sizes 7/64" to 1½".

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FOR THE ANSWER TO THE QUESTION — "What Masonry Bit Should I Use?" — WRITE for our "WHAT and HOW" MANUAL. It's FREE, and very helpful.

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Please send me FREE "WHAT and HOW" MANUAL

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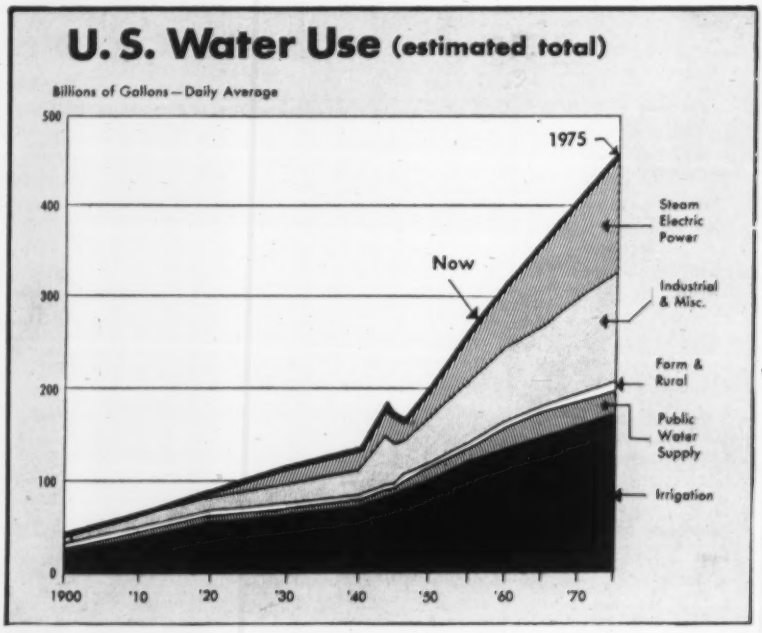
TYPICAL ROOM in multi-story bunkhouse. In some rooms six instead of four workmen are quartered. Note the small window for ventilation in cold weather.

care of by rock wool in the joints between the main panels and the plain aluminum strips at the columns as shown in the accompanying drawing. Each joint is closed by two butt straps, one on the outside and one on the inside, pulled together by a screw. The exterior strap contains two grooves into which a synthetic rubber waterproofing is forced, and the inner strap is rounded on the edges to fit snugly against the interior wall surface, and to eliminate projecting sharp edges.

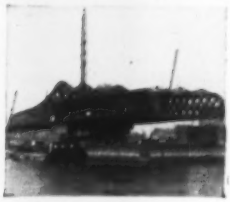
The building provides accommodations for 450 workmen, either 4 or 6 to a room.



U.S. Water Use to Soar 73% in 20 Years

As part of its continuing program to provide basic information needed for planning water resources development, the Water and Sewerage Industry and Utilities Division, Business and Defense Services Administration, Department of Commerce, has projected U. S. water use for the next two decades. Bases for the projections are an estimated population growth from 164.6 million in 1955 to 206.6 million in 1975, and a rise of 50% in the industrial index. A bulletin, "Water Use in the U. S.—1900-1975" is available at Commerce Department field offices for 10 cents.

MEN OF STEEL



The reconstruction of the swing span over the Harlem River between the boroughs of Manhattan and the Bronx was executed by TERRY.

The story behind the brilliant construction achievements of the great TERRY organization is basically the story of men. Men of proven ability. Men of vast experience. Above all, *dedicated men* who have made it their business to master every facet of engineering, designing, fabricating and erecting. In every sense of the word, *men of steel.*

work . . . not words . . . tells the story of

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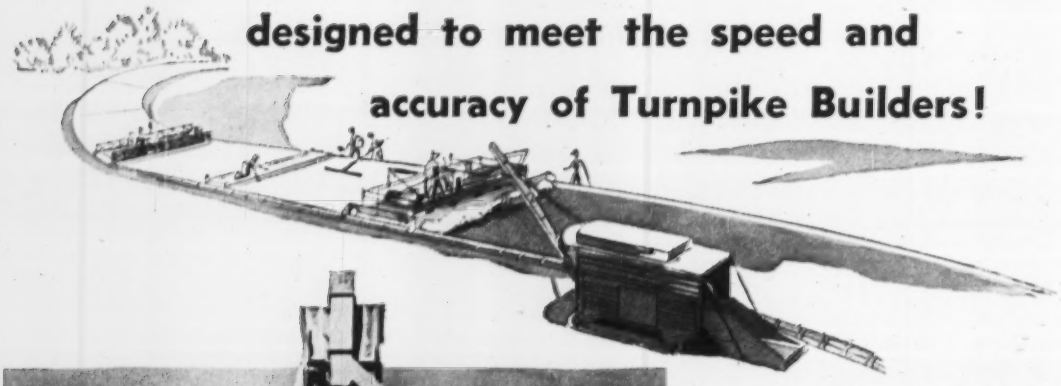
Strictly for Production

New Heltzel Batchmaster Plants designed to meet the speed and accuracy of Turnpike Builders!

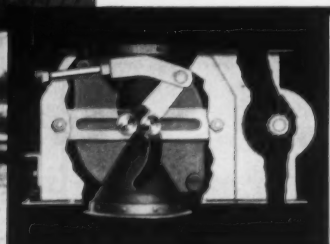


HERE are the paving plants the industry has been looking for! Big capacity Heltzel Batchmaster Production Paving Plants that have the portability, speed and accuracy to more than meet modern day work schedules and job specifications.

Let's look at the Standard E-3 Automatic Cement Batchmaster. Of flare leg design, to permit easier truck access, the plant has the exclusive Heltzel combination gravity vane cement charger (below) that means the fastest, most accurate batching yet possible. Designed for fast, easy dismantling, it easily comes within the dimension limitations for over-the-road hauling. The plant itself will hold up to 609 bbls. of cement. Add Heltzel's high speed recirculatory system and this capacity can be expanded to over 1600 bbls. Smaller size recirculators also available.

A perfect mate to the E-3 is the Type 200 Batchmaster aggregate plant. It is a sturdily built, portable plant that holds a full 200 tons. Yet it can be quickly dismantled into four sections for transporting from one location to another. It is compartmented to suit requirements. It will carry the largest batchers made, including Heltzel's exciting new electronic unit.

If your program for this year calls for the placement of a large quantity of concrete, these plants will save their initial cost in short order. Before you buy equipment, let us show you their many advantages. And remember, it costs no more to own Heltzel Batchmasters—so why not operate with the finest.



The amazing Heltzel Combination Gravity Vane Cement Charger that permits cement batching with a speed never before attained, to an accuracy that has rewritten the record books. It's standard equipment on all automatic Batchmaster plants.

THE HELTZEL

Paving!

HELTZEL

BATCHING PLANTS

Heltzel is one of the nation's leading proponents of automatic and electronic batching. Let their sales engineers show you the latest in these modern day batching techniques.

STEEL FORM AND IRON COMPANY

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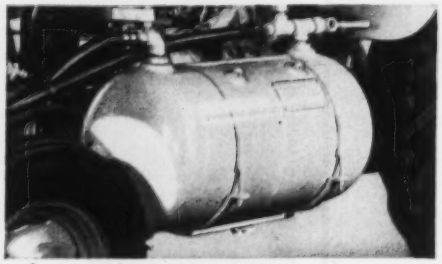
WARREN, OHIO

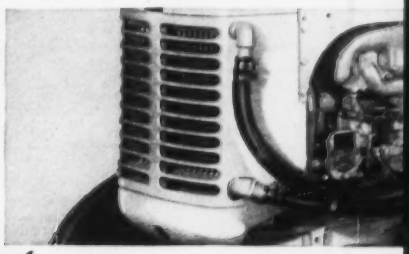
Check These Points Thoroughly
before buying a combination Tractor-Compressor

Absence of these engineering design features can mean less work done and more cost on your next job.

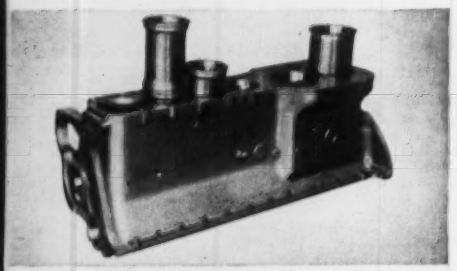
In recent years, combination tractor-compressor units have been increasingly popular. This is due, in large measure, to the fact that machines of this type are much easier to keep at work all day than their counterparts: an ordinary tractor and a standard portable compressor. To insure that you get the maximum benefit from any combination tractor-compressor unit, check these important points before buying.



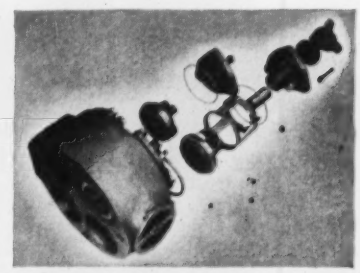
✔ **Location of the compressor air receiver** is important. The air receiver must be exposed to give you cool outside air in every operating condition, and should not hug the hot engine or be located next to the gas tank.



✔ **An air-cooled aftercooler** permits the tractor-compressor to deliver clean, cool, dry air hour after hour. Best cooling results can not be obtained from those units using a water-cooled manifold as an aftercooler.



✔ **Replaceable wet sleeves** in the cylinder construction of your tractor-compressor eliminate costly reboring jobs, and give you more efficient cooling by directing a 360-degree flow of water around each individual cylinder.

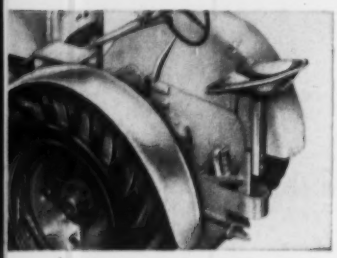


✔ **Interchangeable and replaceable compressor valves** let you get longer service life from your tractor-compressor. This feature also lowers your maintenance costs and assures top performance.

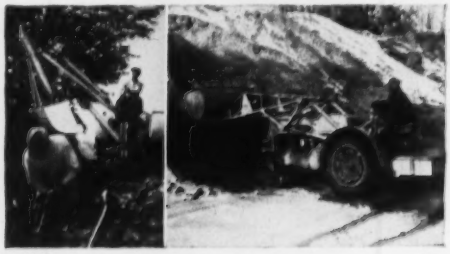
✔ **Plenty of operating space** is important, too. Be sure that your tractor-compressor permits the operator to drive and work efficiently and safely. He should be able to stand up while operating the unit.

✔ **A hood that is easily and quickly removable** helps reduce the time needed for minor repairs on your tractor-compressor. It permits preventive maintenance practices, too. Ask for this feature.

✔ **The fastest possible travelling speed** is a time-saving feature of the tractor-compressor. Be sure that your unit can get you from job to job in the shortest possible time.

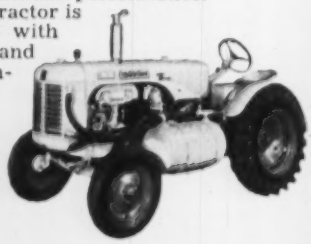


✔ **Wrap-around fenders are a must.** This is a major safety factor, particularly when the tractor is operating on rough ground or on highways and streets.



✔ **Many attachments for use with the unit** give you greater job versatility. Be sure your machine is designed for use with attachments such as the front-end loader, backhoe, and other tools.

✔ **If it's built and designed by one manufacturer** as a complete unit, you can be sure of maximum performance. Make sure that the tractor is designed to "work" with the compressor unit and is not an ordinary industrial tractor. The engine, too, should be a product of the manufacturer offering the unit. Your unit should "belong together."



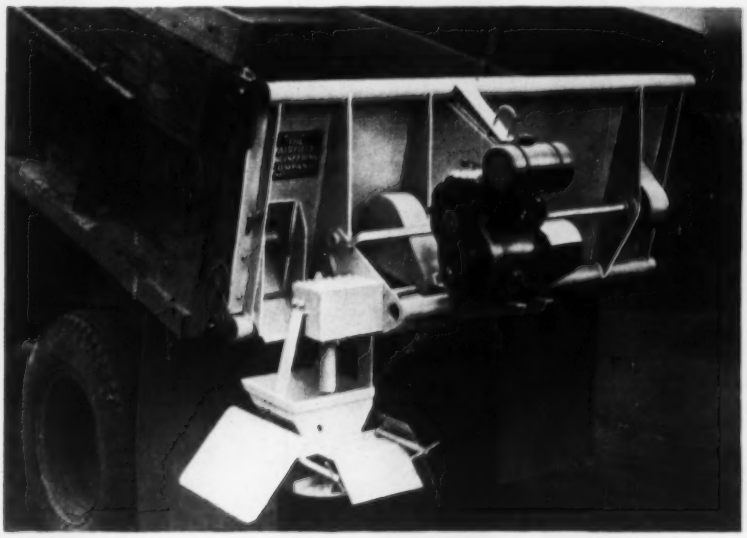
These features can be found only in the Le Roi Tractair — a combination 42-hp wheel tractor and a 125-cfm air compressor. Be sure you get *all* the savings in time and money that the engineering design of Tractair offers you. Check before you buy.

Le Roi Division of Westinghouse Air Brake Co., Milwaukee 1, Wis. also manufactures portable and stationary air compressors, heavy-duty industrial engines, and air tools. Write us for information on any of these products.

7-51

Loader for Low-Profile Tractors

A hydraulic loader attachment that fits most low-profile tractors is available in buckets of 9- and 16-cu ft capacities. According to its makers, the loader has a breakaway strength of 2,000 lb and a 1,000 lb lift. Double-acting hydraulic cylinders are used for lifting and controlling the bucket. Special cross-ties equalize stress, adding to stability and reducing sideway. Originally designed as a farm machine, it is being used for non-farming work. The Farmhand Co., Hopkins, Minn.



Material Spreader for Dump-Body Tailgate

An improved material spreader for salt, sand and cinders is announced by the Fairfield Engineering Co. The unit features simplicity of installation and ease of operation. It will fit any standard 3-cu yd dump-body tailgate, and the manufacturer claims quick installation. Complete controls for the material being spread are located in the truck cab and operated by the driver, eliminating the need for an extra man riding the truck body. Adjustable baffles at the distributor disc control spread width, and more material can be thrown forward to obtain better traction by removing the front baffle. Fairfield Engineering Co., Marion, Ohio.

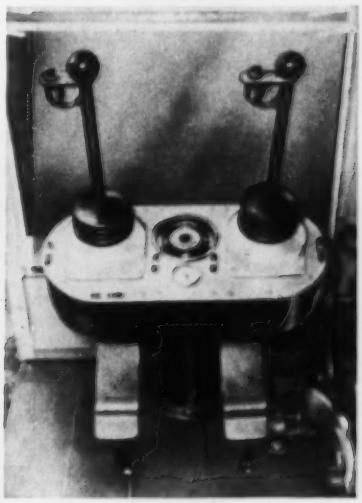
Wall-to-Wall Window Has Sliding or Fixed Panels

An aluminum window wall with sliding inserts, marketed now for commercial buildings, is believed by the maker to be the largest such unit manufactured. Available in any width (partition-to-partition if desired), it comes in heights to 5½ ft. Cost not including installation, is about $1 psf.

The glazed panels in a frame may be any combination of fixed and sliding. Sliding inserts move on nylon roller bearings in stainless steel weatherstripping. They can be removed easily from inside for cleaning. Special locks that limit opening widths are an available safety feature.

For buildings that require plastic or aluminum facing in color, the manufacturer offers fixed insulated panels for installation around the window walls. Luria Building Products, Inc., Bristol, Pa.

(*New Products continued on page 58*)



Two-Lever Air Operation

A new type of air control is now available on eight models of the Lorain power shovels and cranes—the models ranging from 20- to 30-ton capacity on crawler and rubber-tire mountings.

The new "Air Ease" controls operate all friction clutches by air power. Only two levers are used (instead of the more usual four or more) to control operations. On self-propelled rubber tired machines, travel is also controlled by air.

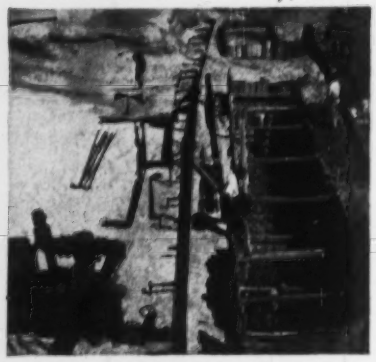
Claimed for the development are easing of operator fatigue and savings in time. Thew Shovel Co., Lorain, Ohio.

HOW TO HANDLE
WET JOBS

NEW SEA LIFE HOME
FOR MARINE STUDIOS

Marineland, Fla.

Contractor: Arthur Perry, Inc.



50 POINTS, 240-ft header: What volume could be handled by a well-point system of such size, working in very coarse water-bearing sand just a few ft from the ocean? Answer below.

3,960,000 GALS per day were pumped round-the-clock for the life of the job—this entire flow handled by one Griffin Vac-u-matic wellpoint pump.

SUCH exceptional drainage volume —it's 55 gals per minute for each point—will surprise many contractors. Others know from repeated experience the superiority and efficiency of the Griffin system.

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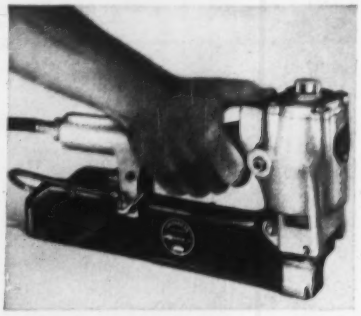
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax



Air Device Speeds Nailers

A new pneumatic attachment for standard mallet-driven nailers makes a one-hand operation out of nailing hardboard or plywood panelling, sidewall sheathing and other materials that may require holding in place while nailing.

According to the manufacturer, the new "Model M" attachment employs a high-velocity system that can drive a large variety of fasteners, including heavy gauge staples and sash pins up to 1¼ in. long. The machine readily lends itself to mounting in multiples for gang nailing. Spotnails, Inc., Evanston 36, Ill.

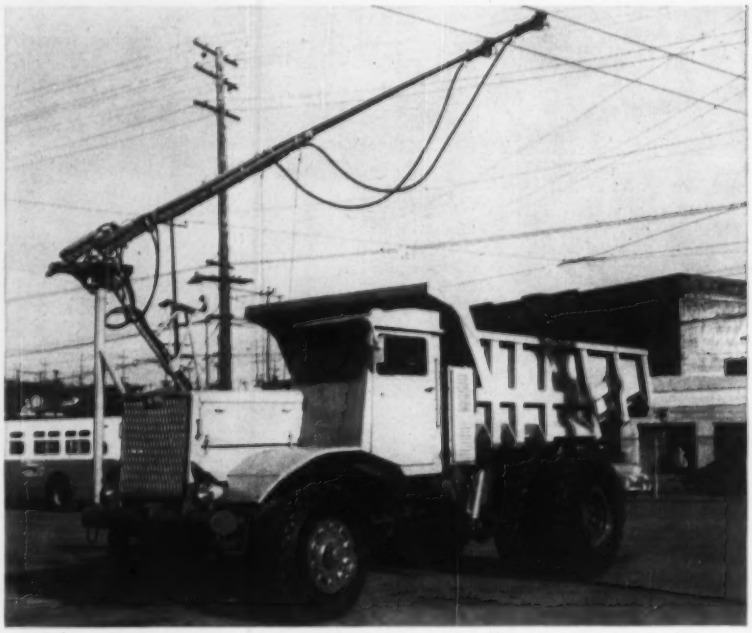
Small Scraper Is Versatile, Has Interchangeable Gear

A new CCS Wooldridge "Cobrette" 10-yd, self-propelled scraper, said to combine versatility with many other features, is ready for delivery.

Rated at 7.5 cu yd struck, and 10 cu yd heaped, the 143 hp diesel-powered unit is capable of speeds up to 30 mph. Manufacturers say its versatility and ease of operation are achieved by a power train that includes fluid coupling, air-actuated clutch and transmission, and a readily-accessible gear transfer case permitting easy interchange of the two standard gears to provide optional gear ratios for most effective use of power according to job requirements. The cable control unit is also air actuated.

The front end, tractor frame and power train are especially designed for pushing, to enable two or more of the machines to assist each other in loading. WOOLDRIDGE MFG. DIVISION, CONTINENTAL COPPER & STEEL INDUSTRIES, INC., SUNNYVALE, CALIF.

(*New Products continued on page 60*)



Electricity Moves Underground Earthmovers

Four electrically powered trucks for underground hauling have been put into operation by the Riverside Cement Co., Riverside, Calif. Overhead trolley wires supply current for the electric traction motors. Designed for high-cavern mining operations, the end-dump trucks each carry 16 cu yd struck (19 cu yd heaped) at a maximum speed of 25 mph. The overall length of 24 ft 10 in. on a 14-ft wheelbase allows far more mobility than rail installation, according to J. G. Holmstrom of Riverside—and critical problems of mine safety and ventilation are reduced. Kenworth Motor Truck Co., of Seattle, with a design assist by General Electric Co.

Champions in their field...

All horses can run—all shovels can dig. But it takes a champion to win consistently—especially when the going gets tough. The rewards of championship performance are great. For economically sound pride of ownership and consistent output that earns and deserves continued enthusiasm, try a Marion. It's a champion in its field!

Marion 111-M—Up to 5 Yard Dragline

Marion Means Business

MARION POWER SHOVEL COMPANY — MARION, OHIO

SONOTUBE® — formed 36" I.D. concrete piers erect quickly . . . economically!

Piers for 15th Street Bridge, Allentown, Pa.
E. A. Daylor Company, contractors.

SONOTUBE®

FIBRE FORMS

for round columns of concrete

The round concrete piers for this Allentown, Pa. bridge were formed by SONOTUBE Fibre Forms. These piers are 28-feet high and 36-inches in diameter.

Low-cost SONOTUBE Fibre Forms erect quickly because they handle easily and require minimum bracing. Use SONOTUBES for round concrete piers, columns and underpinning and save time, money and labor! Also an economical form for encasement of steel columns and steel and wooden piles.

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. . . New Products

Platform Attaches to Loader

A work platform attachment is now available for the American Road Equipment Co.'s hydraulic loader, "Economobile 600."

The platform has a 3x4-ft plank supported by a heavy angle-iron frame. Surrounding the work space are 3-ft-high, tubular-steel safety rails with a removable front section.

The platform can be attached to the loader quickly and easily, according to the manufacturer. The loader's 22-ft hight range and 6-ft horizontal reach make the loader-platform combination useful for such jobs as street light repair and tree trimming. It can also hoist building materials. American Road Equipment Co., 4302 N. 28th St., Omaha, Neb.

Bigger Fiberglas Boards Offer Flexibility in Design

Eight new standard sizes are announced for Fiberglas acoustical ceiling boards in a move to accommodate the trend toward modular construction of ceilings. The new sizes, in inches, are 16x48, 24x24-30-48-60, 30x30-60, and 48x48. All the sizes are ¾-in. boards, except for the 48x48, which is 1¼ in. thick.

A grid of inverted T members supports the panels on exposed flanges. Individual boards can be lifted for access to duct work or wiring that may be located above the ceiling. Owens-Corning Fiberglas Corp., Toledo 1, Ohio.

Publications

High-tensile bolts—Practical working information for the man on the job is furnished by means of text, photos and line drawings in a 20-page booklet on high-tensile bolts. Intended as a working guide for ironworkers, the booklet explains the theory of bolting in elementary terms. Sections are devoted to identification and proper sizes of high-strength bolts, comparisons with machine bolts, use of hardened washers, good installation practices, and calibration of impact wrenches. Air supply and inspection techniques and tables of recommended torques are included. Bulletin HS-1. Russell, Burdsall & Ward Bolt and Nut Co., Port Chester, N. Y.

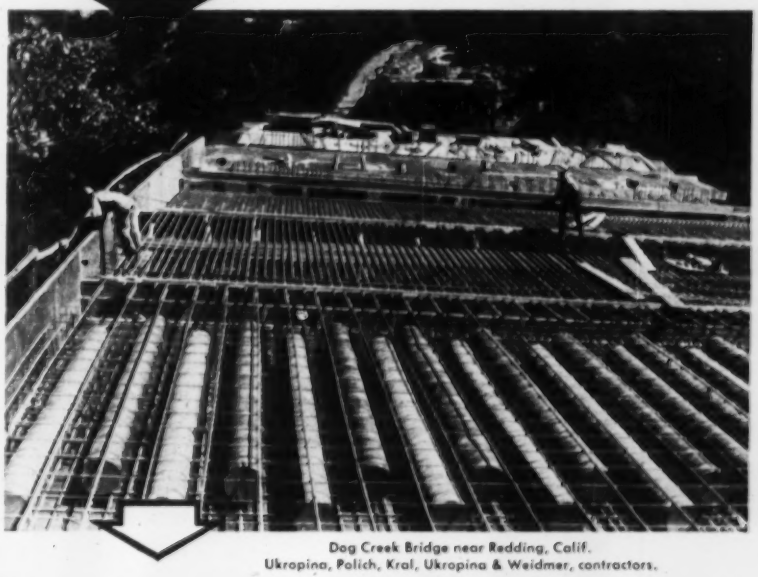
Wood fiber roof decks, ceilings—Sixteen-page, 1956 design manual for Tectum, a wood-fiber-concrete insulating board, tabulates such data as heat-transfer and sound-absorption coefficients, ultimate and design loads, weights and standard sizes. The booklet describes and illustrates architectural details and installation methods for different types of framing; e.g., steel, wood or concrete joists. Sub-purlin design tables are included. Photos and text also explain uses as acoustical ceiling panels and wall insulation. Specifications are given. A separate four-page folder elaborates on acoustical ceiling applications.—Tectum Division, Peoples Research and Manufacturing Co., 105 S. 6th St., Newark, Ohio.

Incinerator design—Latest and best incinerator design standards are contained in seven pages of data sheets. Categories covered are waste analysis, classification of incinerators and specifications. Incinerator Institute of America, 420 Lexington Ave., New York 17.

Surveying equipment—Distributor of leading brands of surveying equipment has illustrated line in 32-page catalog. Included are transits, levels, range poles, leveling rods, measuring tapes, field books and related accessories. Frederick Post Co., 3666 N. Avondale Ave., Chicago 18.

Truck mixers—A fifteen-page bulletin describes Worthington's Hi-Up Truck Mixers. Various component parts are explained and maximum legal payload and truck mixer weight data is included. Advertising & Sales Promotion Department, Worthington, Corporation, Harrison, N. J.

SONOVOIDS® in spandrels and bridge deck equalize and lighten the load!



Dog Creek Bridge near Redding, Calif.
Ukropina, Polich, Kral, Ukropina & Weidmer, contractors.

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FIBRE TUBES
for voids in concrete construction

The Dog Creek Bridge in the Sacramento River Canyon near Redding, California is an arch spandrel structure, with an open spandrel length of 300', overall length of 642' 7".

Low-cost SONOVOID Fibre Tubes of 12" O.D. were used in the spandrel columns on the north side of the arch. Because the bridge deck is on a constant upgrade to the north, the spandrels are longer. Use of SONOVOIDS equalized the load on the arch.

SONOVOIDS of 16" O.D. were used in the first 55' approach span at the north end to lighten the load through the displacement of concrete at the neutral axis.

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Up it comes as the operator slides the cutting-edge under the concrete and applies break-out action. Photo shows how the slab usually breaks before it topples over.

Authorities forbid breaker ball, so contractor removes 8″ concrete with 2¼-yd. Michigan

Contractor Roberts E. Latimer, Jr., Inc., Silver Spring, Maryland, ran into trouble on a recent job. The contract called for removing a stretch of highway where the concrete slabs were 8-inches thick by 12-ft. wide. When they bid the job they expected to break up the slabs with a breaker-ball. But when they went to work, authorities told them that a decayed 14-inch gas main ran underneath the road. "No breaker-ball—too dangerous."

Crane wouldn't work

Latimer tried to break out the slabs with a ¾-yd. crawler shovel; it wouldn't work. Next they tried a crawler-loader; it didn't have enough lifting capacity or break-out power either. At this point Paving Supply and Equipment Co., Washington, D. C., suggested that they try a 2¼-yd. Michigan Model 175A on the job. Latimer frankly didn't believe that *any* type of loader could break out the heavy slabs —much less a rubber-tired machine. But they finally agreed to let the distributor demonstrate the Michigan. When they saw, they bought.

Michigan's exclusive break-out action

The photograph on this page shows how the 133-hp Michigan handles the job. The operator slips the bucket cutting-edge under the slab. Then he applies bucket break-out action. When the slab has lifted about 2 feet, he eases forward, gets under the slab as he lifts the bucket. The concrete usually breaks as it's being raised. If it doesn't break, the Michigan pushes it over the curb to a spot where the breaker-

On a similar job in Philadelphia, Union Paving Company uses a Michigan 125A (1⅝-yd. capacity) to break and load out 8-inch concrete slabs. This bucket-load weighs about 6000 lbs.—well below the 11,000 lb. rated capacity of the 96-hp Michigan. When the operator steps on the brake, the power-shift transmission automatically goes into neutral—puts all the engine power into the bucket hydraulic system. This feature is standard on all Michigans.

ball can be used safely. Then the Michigan loads out the chunks.

Moral: see it in action

Like Roberts E. Latimer, Jr., Inc., more and more contractors are using Michigan Tractor Shovels as construction prime-movers. It's no accident that this machine will handle jobs that have never even been attempted on rubber. The complete Michigan power-train—torque converter, power-shift transmission, planetary axles—was designed and built by Clark to give this machine more useable power and traction than you've ever seen on any rubber-tired tractor shovel. Before you decide that this type of machine can't handle a particular job, do what Latimer did. Ask for a Michigan demonstration. *You name the job.*

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Michigan is a registered trade mark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division
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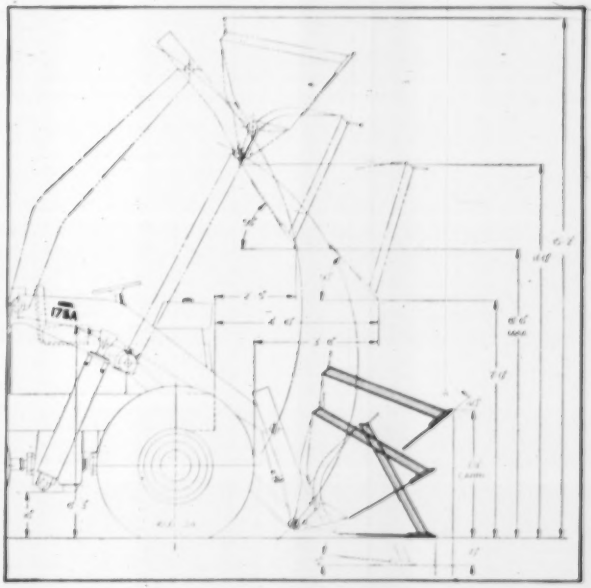
Benton Harbor 13, Michigan

Below: **Low-level breakout force** of the Michigan 175A is applied by two 7-inch double-acting bucket cylinders; the full tip-back is 40 degrees. Note the clean design of the Michigan bucket mechanism—preserves the dumping clearance over truck sideboards.



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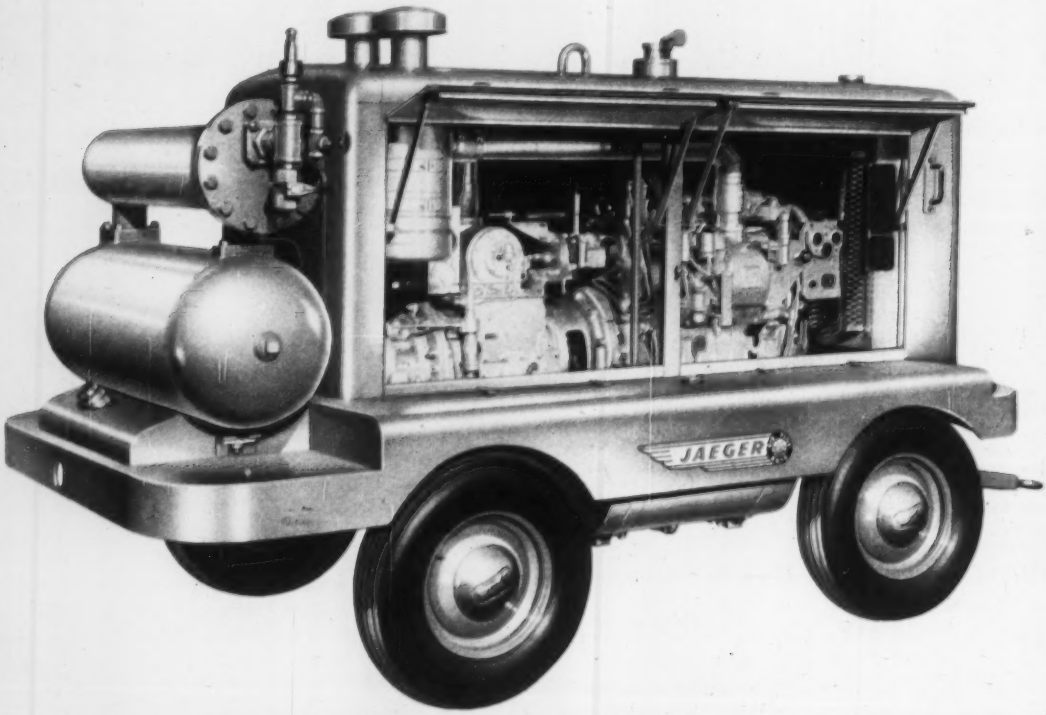

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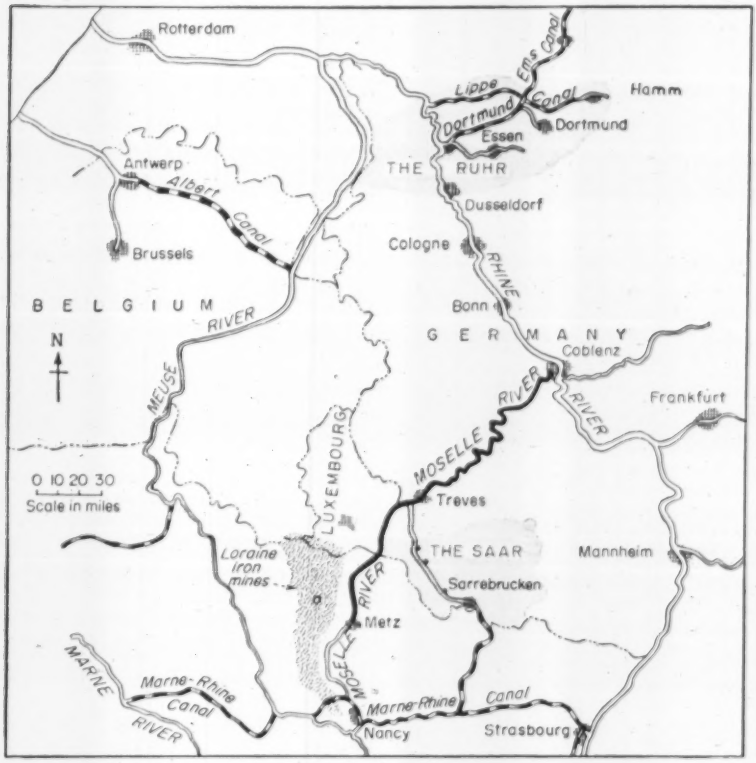


European Unification—

River Project May Be the Key

Canalization of the Moselle River and its internationalization for barge traffic, if agreed to by West Germany, would probably persuade France to drop its objections to the Saar coal mining region being annexed to Germany as the Saarlanders demanded in their recent voting. This is the opinion of diplomatic experts observing the talks between the two governments, now going on in Paris, where the river project is a focal point of discussion. They also note that if the Saar problem would thus be solved, the most troublesome block to European unification would be removed.

Why canalization of the Moselle is so important to France is made clear by the accompanying map. The river which joins the Rhine at Coblenz, also penetrates France's great Lorraine iron mining region. France trades large quantities of Lorraine ore with Germany for coal from the Ruhr, and it also exports ore farther down the Rhine to Holland and even to Britain. Between Nancy and Thionville on the Moselle, considerable French industry has also grown up, principally chemical plants and steel mills, and these industries requires access to the Rhine for import and export.

With the lower Moselle in German possession, a short route to the Rhine has been denied the French, except on the payment of exhorbitant charges, which were accentuated because only small, shallow draft barges could be used. And the Germans, of course, could see no reason to cooperate in any canalization scheme to improve the river for navigation.

The early French alternative was to use the Marne-Rhine Canal through Strasbourg in a roundabout route to connect the Lorraine with the Ruhr and effect the necessary ore-coal exchange. This situation has built up the French city of Strasbourg into a considerable port, which created a domestic block to the Moselle project, since Strasbourg opposes any change in the status quo. It is now confidently believed, however, that opposition would lost its effectiveness if there were a chance of German cooperation on the canalization.

Improving the Moselle for navigation has always been spoken of as a $150-million project. French engineers figure it could easily run to that if the entire 150 mile length from Coblenz to Thionville were to be equipped with locks and dams, but developments have occurred in recent years which may make a lesser improvement adequate. One of these has been the successful use on the German part of the river of some 4-ft draft motor barges of 600 tons. Such vessels could operate for half the year up to Thionville and, with channel rectification and some dredging, vessels up to 6 ft draft could make the trip. Thus the construction of some 15 locks and dams required for complete canalization could be omitted with a great reduction in the necessary investment. Above Thionville, locks and dams would be necessary but even so, the total cost of improving the whole river could be far less than $150 million.

What the French would like from the current talk would be an agreement to internationalize the Moselle, so that freight rates could be set which would not be stacked against them. Once the Moselle is freed of artificial restrictions, they feel they can better determine its potential traffic, and therefore the investment justified to improve it. For German cooperation on the Moselle it is believed in many quarters France would agree to German annexation of the Saar.

Aerial Survey Set for Venezuela Power Scheme

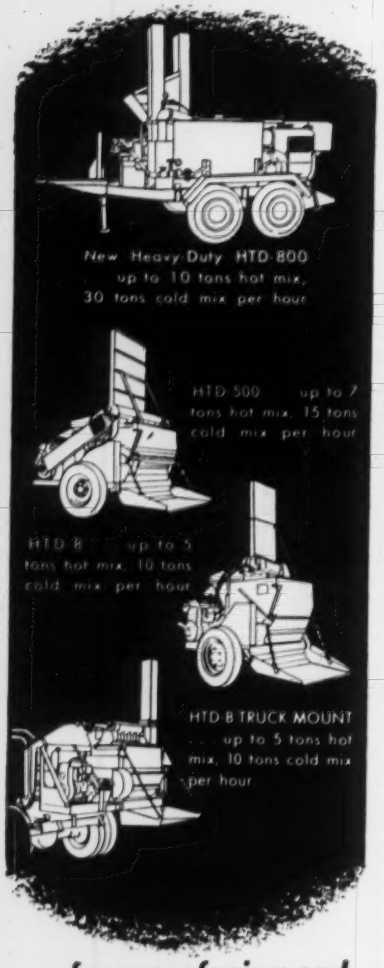
Venezuela has chosen a three-company combine to carry out an aerial survey of 225,000 acres along the Caroni River.

The survey—which is expected to take a year to complete—will be a preliminary to the development of electric power to serve the rapidly growing industrial area in the vicinity of Ciudad Bolivar. This city, principal population center of the area, lies about 75 miles above the junction of the Caroni and Orinoco Rivers.

The contract for the survey was awarded jointly to Photographic Survey Corp., Ltd., Toronto; Aeromapas Nacionales of Caracas (an associate company of PSC); and Cartographia Mercator, another Caracas firm.

(*International continued on page 66*)

McConnaughay
HOT ASPHALT MIXERS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tons hot mix, 10 tons
cold mix per hour
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up to 5 tons hot
mix, 10 tons cold mix
per hour

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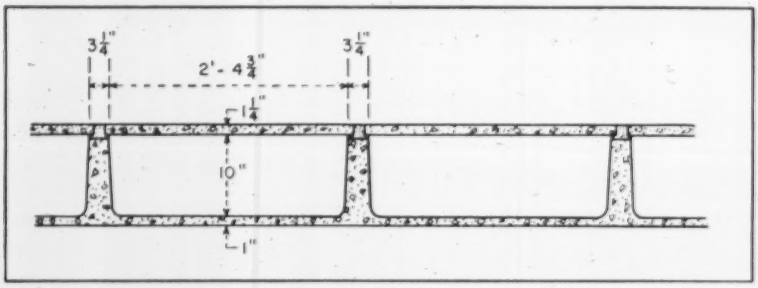
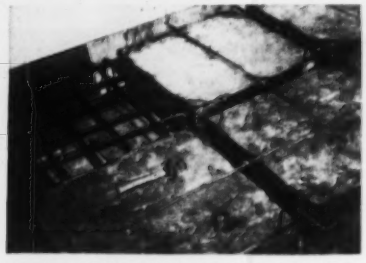


INVERTED waffle-type floor features ceiling, instead of floor, cast with ribs. Cell openings are spanned along top by 1¼-in. precast slabs.



RE-USABLE metal boxes form cells. Concrete will come to level of box tops.

WAFFLE GRID is seen from above after box removal. One floor slab is shown.

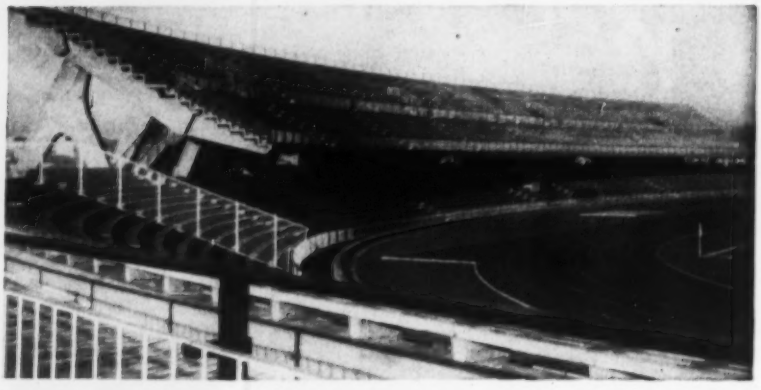
This Floor Is Built Upside Down

The conventional waffle-type concrete floor system is turned upside down in a new building in Colombia, S. A. Instead of concreting ribs and floor slab monolithically and applying a ceiling on the underside, the builders cast ribs and ceiling as a unit and then laid precast concrete floor slabs over the open cells.

The principal advantage claimed for this method is that metal boxes used for cell forms are more easily removed from above. Also, wiring, pipes and duct work can be installed from above.

The sheet metal boxes are 28¾ in. sq in plan and 10 in. high, with a ¾-in. taper top to bottom to facilitate removal. Inside reinforcement adds resistance to lateral pressure of concrete.

For the concrete placing, the boxes



Every City Will Have Its Stadium

Athletic stadiums like this 28,000-seat prototype, built at Pescara, Italy, are planned eventually for every Italian city with a population of 75,000 or more.

Designed in an architectural competition, the reinforced concrete stands consist of an oval of banked seats around the playing field and a raised grandstand along one side. Grandstand supports are reinforced concrete bents of wishbone shape and inclined straight columns. Bays between bents are spanned by two reinforced concrete stringers, which carry the sloping seat rafters.

(Advertisement)

Scaffolding Methods . . . by Patent Scaffolding Co.

CLEAR WORKING AREA — A. H. Maxted, masonry contractor, uses this tube and coupler scaffolding method when laying up brick veneer on the Broadway-Hale Department Store, Anaheim, Calif. The scaffold was erected from "TubeLox"® Scaffolding consisting of interlocking steel tubes and couplers. Short pieces of the tubular steel are secured to the inner scaffold posts and cantilevered toward face of building to support masons' platform. Ford J. Twaits is the general contractor on the multi-story building.

FAST LOCK-UP—"Trouble-Saver"® Scaffolding frames are available for sale or rental with these fast-acting SlideLoks for joining pivoted, diagonal braces to frames. Wing Nuts are eliminated, erection and dismantling time cut.

CLOSE AT HAND — Masons and materials are never far apart on this "Trouble-Saver" Sectional Scaffold. A separate 20"-wide platform is laid on sidewall brackets attached to scaffold frames at a convenient distance below the storage level. General contractor Damon G. Douglas uses this method for speeding masonry work on elevator shaft at Hyatt Roller Bearing plant in Harrison, N. J.

EXTRA WIDE — Wheeled buggy delivering half-pallet of bricks to masons has plenty of room on PS Co.'s 8'-wide "Gold Medal"® Safety Suspended Scaffold at the Northland Shopping Center, St. Louis. Masons have plenty of room, too, with drum mechanisms set back 20" from wall. Plastic window of enclosed scaffold can be seen at right. Contractor, Roy Elam Construction Co.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that **sells** and **rents** "Gold Medal" Scaffolds.

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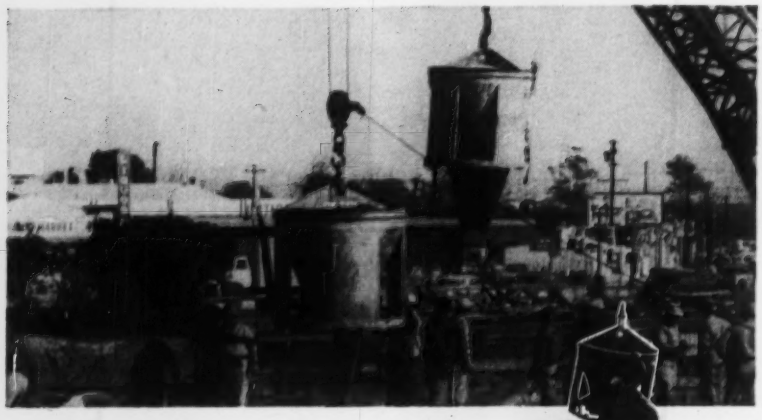
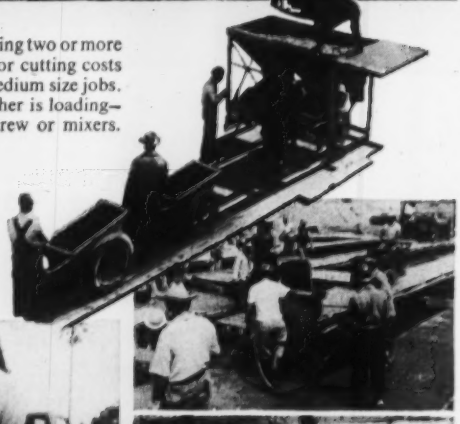
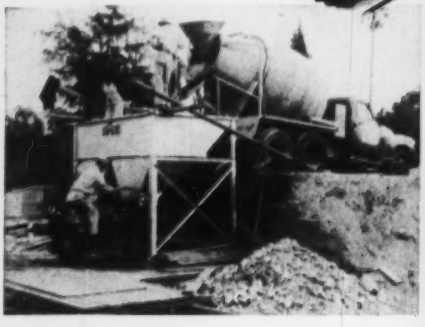
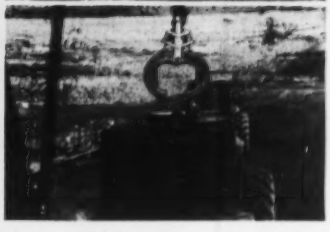


SETTING A FASTER PACE by using two or more concrete buckets is a method for cutting costs used by many contractors on medium size jobs. While one is discharging the other is loading—there is no delay of placing crew or mixers.

FLOOR HOPPERS keep concrete carts moving by serving as storage for concrete. Fill them direct from truck mixer or by bucket if in elevated position.







POWER-CARTS, because they carry more, travel faster and are non-fatiguing, can place 4 to 5 times as much concrete per hour as a push cart even at hauling distances of 1000 feet.

PORTABLE HOPPERS move from job to job easily and save hours of time all the way down the line from mixer to placing crew to finishers because it eliminates waiting time and delay.

New power operated CRANE HOOKS are electrically controlled from the crane cab. They are ideal for picking up and releasing each individual bucket when several buckets are used.

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were set on a conventional flat-surfaced wood base that served as the form for the ceiling. To allow concrete to flow under the boxes, 1-in.-high stands—bent from short lengths of ¼-in. rod—were placed under the box corners. U-shaped ¼-in. rods, inserted into holes in the tops of the boxes tied them together in rows 3¼ in. apart—the thickness of the ribs—in both directions.

Reinforcing steel was suspended from bars laid over the tops of the metal boxes. These supporting bars were later recovered.

Colombia, other Latin American countries and the United States have granted patents on the system to Juan Pizano de Brigard and Quimet Brugués, the Colombians who devised it.

Transahara Railroad Dream Loses Out to Reality

The Transahara railroad plan—to go from the Mediterranean Sea to the head of the Niger River in French West Africa—has definitely been abandoned. For 80 years, French colonials had dreamed of having products of West Africa delivered by railroad to a Mediterranean port.

However, the railroad never went beyond the town of Colomb-Bechar, near the Algerian-Moroccan border. And now, the French Economic Council has decided there is no economic justification for the road. The Council noted that the existing road crossing the Sahara Desert is more than adequate for traffic now moving across the desert. It also recognized the fact that the normal traffic pattern is first to West African ports and then by sea to world markets. Finally, air transportation has taken most of the potential from passenger traffic.

Significant mineral resources lie in three different directions from Colomb-Bechar. Therefore, it will be desirable to build a network of small railroads converging on this region, and develop its industrial potential.

Americans Plan $20-Million Port, Ferry, Road for Cuba

A five-man group of U. S. businessmen and investors have proposed a $20-million construction project in Pinar del Rio, Cuba.

The preliminary plan presented to Public Works Minister Nicolas Arroyo covers a road, artificial port, and a ferry between Cuba and the peninsula of Yucatan. Three possible sites along the western coast of Pinar del Rio province were suggested.

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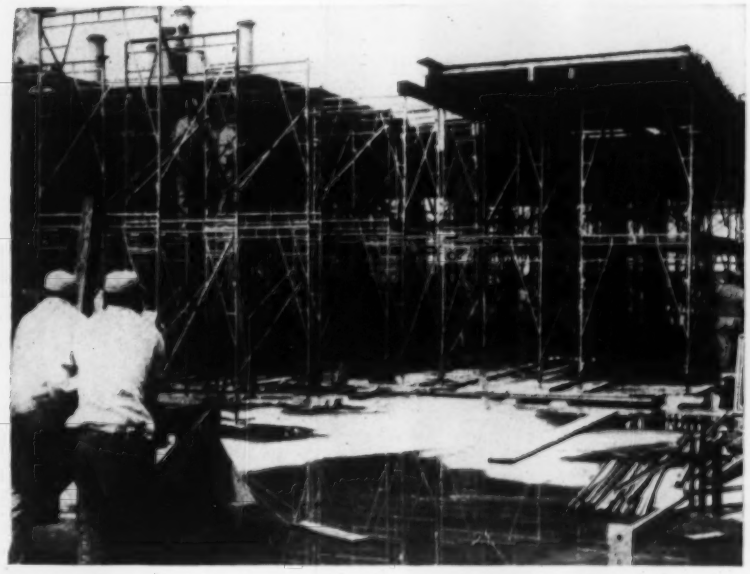
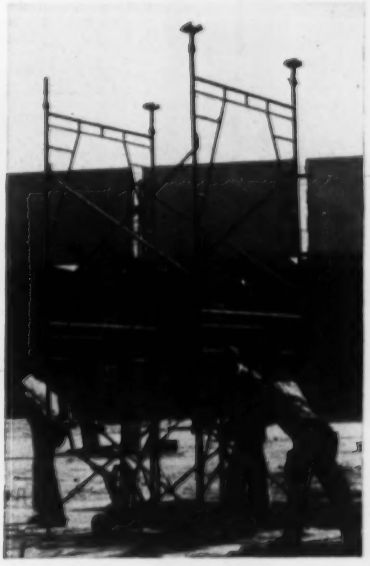


THIS UNIQUE SYSTEM of moving complete sections of shoring to new pour areas is used by Wigton-Abbott Corp., Plainfield, N. J., to eliminate the job of disassembling and reassembling the shoring. Eleven "Trouble Saver" Sectional Shoring units, each covering 720 sq. ft., are pulled on wood sills by a hand winch. Each unit was slid three times for succeeding concrete pours during construction of the 189' x 231' Monsanto Chemical Co. warehouse, Kearney, N. J. Form work was "permanently" placed on those sections between drop heads.



WHEELED HYDRAULIC dolly is used to move four-frame unit of "Trouble Saver" Shoring to next pour. This system speeds operation for William J. Moran Co. on Emporium-Capwell Co. warehouse covering a city block in Oakland, California. 3,600 frames were used on this building.

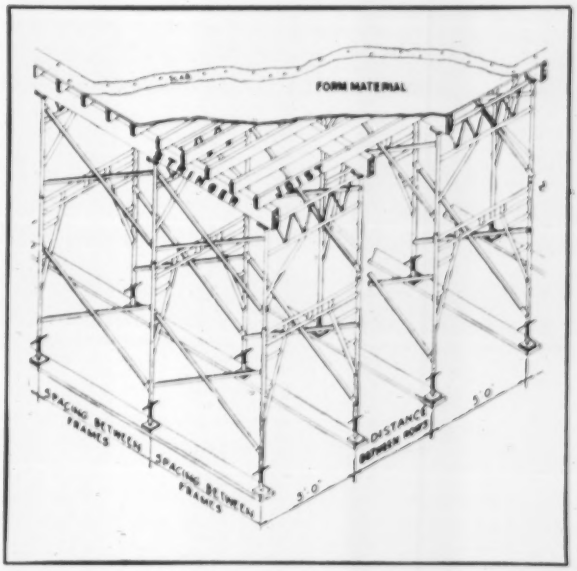
Good Planning Cuts Shoring Costs

ONE OF THE MOST IMPORTANT advantages of modern sectional steel shoring is the fact that it can be planned on the drawing board. Load bearing strength can be accurately calculated, the number of units pre-determined and the whole installation laid out to assure greatest efficiency on the job.

It is during this planning period that the engineering ability, experience and imagination of The Patent Scaffolding Co. Inc., pays dividends to the contractor. For when a shoring installation is properly laid out on the drawing board, a lot of time, money and trouble are saved on the job.

First, PS Co. helps the contractor select the right kind of shoring by carefully studying the character of the job. Contractors planning with PS Co. have a choice of three types of steel shoring: "Trouble Saver"® Sectional, "TubeLox"® tube and coupler type Shoring and Burton's single post Shores. Once selected, the shoring is laid out to carry the desired loads with an adequate factor of safety and also to get maximum re-use from the number of units needed. Unique methods of rolling, sliding and lifting entire sections of sectional shoring from one pour area to another are often worked out at this stage too.

The complete story on PS Co. Shoring can be found in Bulletin PSS-33 "Modern Shoring for Concrete Construction". It's available at no obligation from the Patent Scaffolding Co., Inc.



SAFE WORKING LOADS for "Trouble Saver" Sectional Steel Shoring vary according to spacing between 5'-wide frames, distance between rows, and position of stringers on frames. This prefabricated, engineered shoring will handle the heaviest loads and provides a clean, neat installation. It is easily adaptable to all types of construction: flat slab, slab with drop head, pan joist, poured arch and beam.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY

THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street Dept. ENR Long Island City 1, N. Y.
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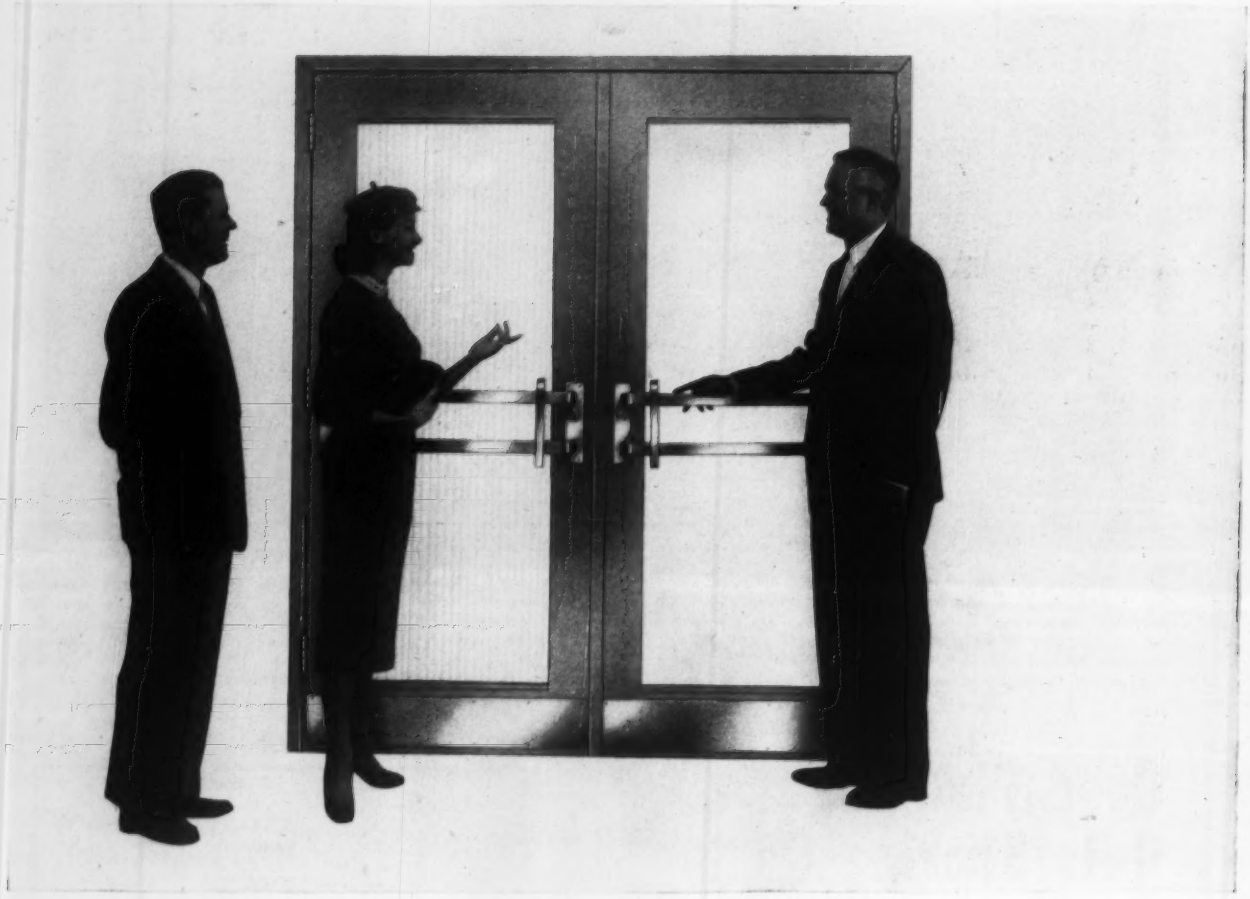
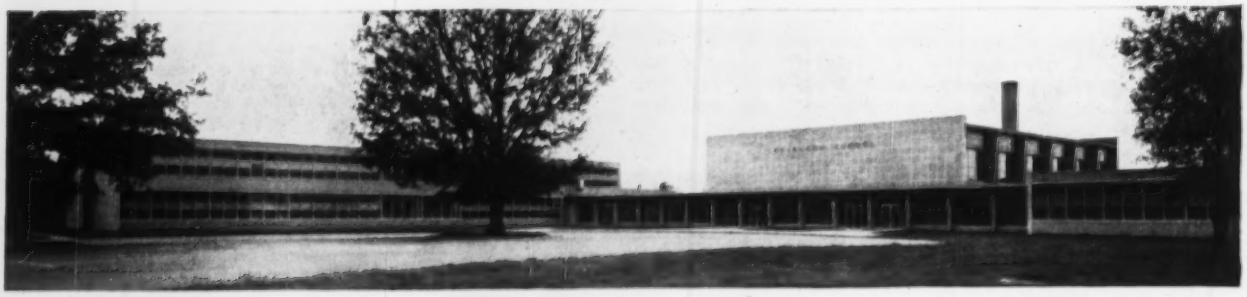


Fenestra packages hollow metal door, frame and hardware units to save you up to $100 per opening with this . . .

NEW IDEA

Look like costly custom-made doors, don't they? They're not. They're stock doors by Fenestra®—with an installed cost about $100 *less* per opening than you'd expect to pay!

Fenestra's new idea for saving you money on school doors is really very simple. We mass produce them on special jigs that save us expensive labor. We pass along this savings to you. We maintain large stocks of standard sizes to give you fast delivery and doors come to your building complete with frames and hardware, ready to install. You don't have to cut, fit, mortise, drill or tap a Fenestra Door. *One*



REIDLAND SCHOOL, Paducah (Reidland), Ky., cost less to build because 134 Fenestra $1\frac{3}{4}$" Hollow Metal Flush Doors were used. *Architect:* G. Tandy & Lee Potter Smith, Paducah, Ky. *Contractor:* Erhart-Knopf Construction Co., Inc., Louisville, Ky.

FOR SCHOOL DOORS

man with a *screw driver* can install it *in minutes.*

Fenestra Hollow Metal Doors swing open smoothly. They close quietly because there's a sound-deadening material inside. You save, year after year, on maintenance because Fenestra Doors can't warp, swell, stick or splinter. They last a lifetime!

Illustrated are Fenestra's 1¾" Entrance Doors, 1¾" Flush Door and the NEW 1¾" *Fen-Air* Louvered Door for air-conditioned buildings—three of the many fine doors in Fenestra's complete line. Call your Fenestra representative for detailed information or mail the coupon below.

Fenestra | HOLLOW METAL DOOR • FRAME • HARDWARE UNITS

Your Single Source of Supply for
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Please send complete information on Fenestra Hollow Metal Doors

Name_____

Firm_____

Address_____

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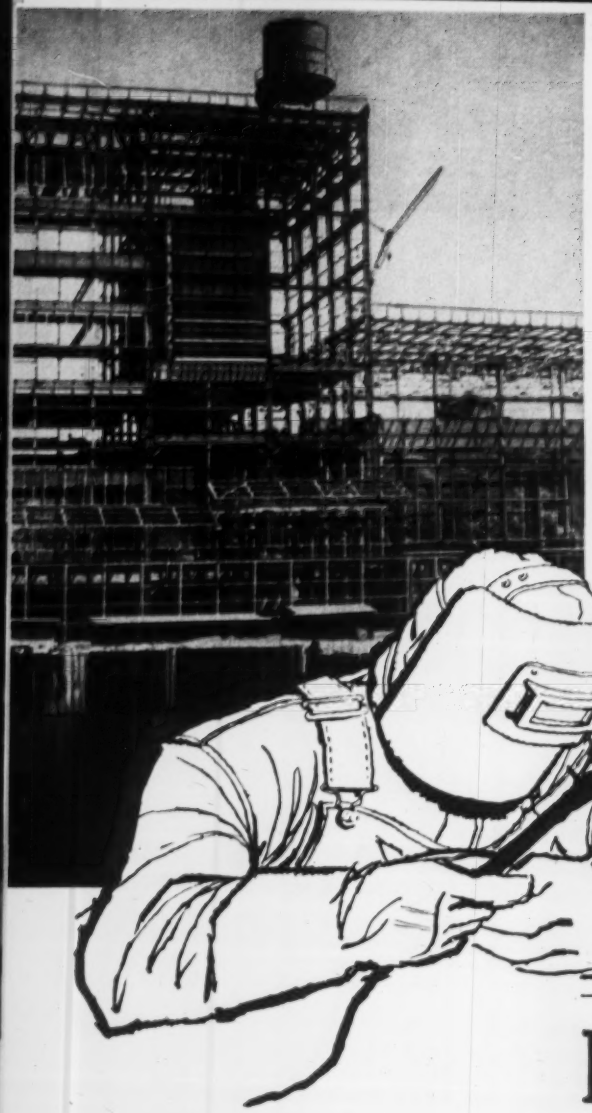


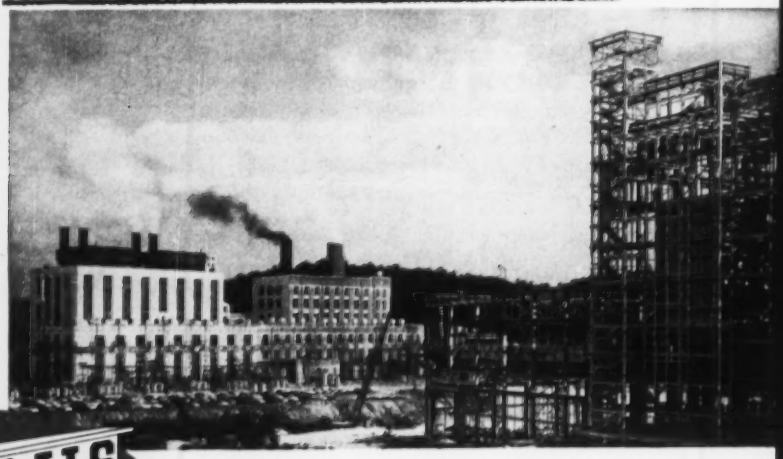
SPECIALIST IN STEEL

This unit of the Gorgas Steam Plant, one of many supplied by Ingalls for the Alabama Power Company, is another in a large series of installations done by Ingalls for power companies in twenty-two different states throughout the North, South, East and Southwest. The structural steel was fabricated at Ingalls' Birmingham Southside plant; the coal bunker was fabricated by Ingalls' affiliate, Birmingham Tank Company; erection was by Ingalls' subsidiary, The Ingalls Steel Construction Company. Field connections on the 3,500 ton installation were made with high tensile bolts for extra rigidity and reduced construction time. Tanks and ducts were also Ingalls-built and erected.

INGALLS

SPECIALIST

Specialist in steel for power plants, Ingalls is ready *today* to help you with speed, economy and the insight of wide practical knowledge. Your inquiries are invited.



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CONGRATULATIONS are extended to Gen. Tulley (right), newly-named Belvoir commander, by Gen. Sturgis, as Gen. Wilson, new Assistant Chief, looks on.

Appointed Commander of Fort Belvoir

Gen. David H. Tulley, Assistant Chief of Engineers for Military Construction, assumes Belvoir command on May 1

Brig. Gen. David H. Tulley, Assistant Chief of Engineers for Military Construction, has been appointed Commanding General of the Engineer Center and Fort Belvoir, Va. He will assume command on May 1 following the retirement of Maj. Gen. Louis W. Prentiss, who will become executive vice president of the American Road Builders' Association (ENR Feb. 9, p. 56).

In his new assignment of multiple responsibility, Gen. Tulley will also serve as Commanding General of the Engineer Research and Development Laboratories and as Commandant of the Engineer School.

Gen. Tulley's successor as Assistant Chief of Engineers for Military Construction will be Brig. Gen. Walter K. Wilson, Jr., Commanding General of the 18th Engineer Brigade, one of the largest engineer troop units now in the United States. Gen. Wilson's command will be assumed by Brig. Gen. John H. Dudley, who has been serving as 7th Corps Engineer in Europe since 1954.

Now 51, Gen. Tulley has been in the Corps of Engineers since his graduation from the U. S. Military Academy in 1925. He served overseas during World War II as assistant engineer of the Third Army, and in 1952 was appointed chief of the Engineer Division, U. S. Army in Europe. As Assistant Chief for Military Construction for the last three years, he has directed and supervised construction of Army installations and the bulk of Air Force facilities in the continental United States and Alaska, as well as in areas northeast of the United States and south of the Mediterranean.

Gen. Wilson, who held various commands during the war with U.S. Forces in the India-Burma Theater, came to the 18th Engineer Brigade after two years of duty as Mediterranean Division Engineer in Casablanca.

Karl Imhoff Is 80

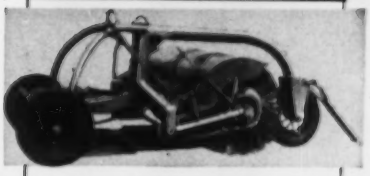
Noted German engineer gave FSIWA its start

A world-renowned engineer celebrates a notable anniversary this week. Karl Imhoff will be 80 April 7.

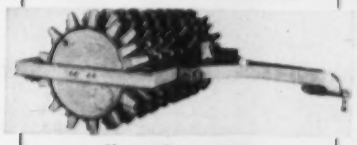
From the U.S. an expression of felicitations will go forth from the Federation of Sewage & Industrial Wastes Associations. A plaque bearing the image of Germany's great sanitary engineer will express appreciation as well as congratulations. It was patent royalties from the Imhoff tank that gave FSIWA its start.

During World War I, the Alien Property Custodian confiscated Karl Imhoff's patent earnings in this coun-

Grace
ASPHALT AND COMPACTION EQUIPMENT

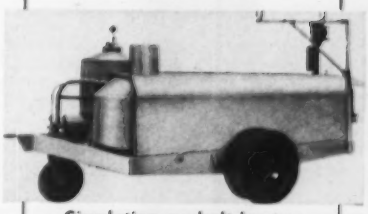


Roadsweepers, traction, engine-driven or tractor-mounted

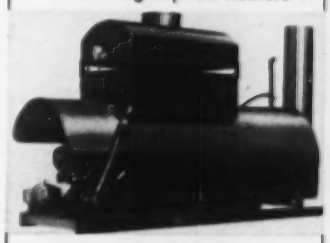


Sheepsfoot rollers

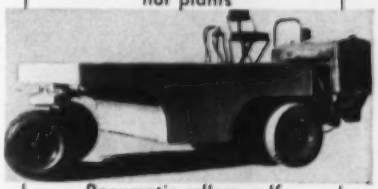
Chip spreaders



Circulating asphalt heaters



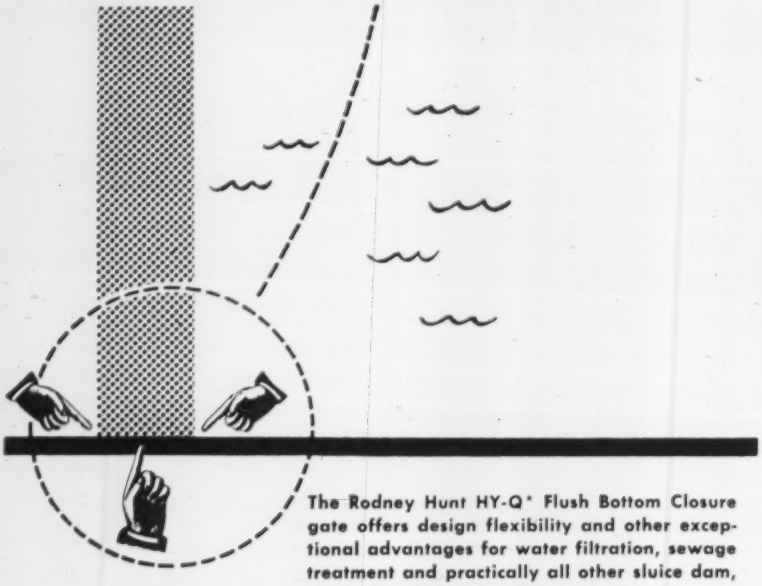
Automatic oil heaters for hot plants



Pneumatic rollers, self-propelled or trailed

W. E. GRACE MFG. CO.
6015 S. LAMAR, DALLAS, TEXAS

the HY-Q Sluice Gate seats flush on the bottom of the channel!



The Rodney Hunt HY-Q* Flush Bottom Closure gate offers design flexibility and other exceptional advantages for water filtration, sewage treatment and practically all other sluice dam, channel and chamber flow control.

1. You get maximum flow because there is minimum turbulence at the point of greatest head.
2. You get *complete* drainage naturally; no need for pumps and piping to get out water trapped behind a sill.
3. You get maximum clear opening because full flow at every raising of the gate sweeps the channel clear of silt and debris.
4. You get maximum hydraulic gradient because the HY-Q gate seats at the lowest level of the channel.

Send for a new 12-page catalog – No. 75 – giving complete description and specifications of the patented Rodney Hunt HY-Q Flush Bottom Closure Sluice Gate.

*HY-Q is a trademark of Rodney Hunt Machine Co.

RODNEY HUNT MACHINE CO.
Water Control Equipment Division
85 LAKE STREET, ORANGE, MASSACHUSETTS, U.S.A.

RODNEY HUNT

. . . Men and Jobs

Karl Imhoff

try. The money went to The Chemical Foundation for a program of research in sanitary and chemical engineering; part of the total funds helped found the Federation and establish its Sewage Works Journal.

Individual U. S. engineers who have had occasion to meet Karl Imhoff will add personal tributes to that of FSIWA–tributes that will appear among those from elsewhere around the world in the German technical press as the Imhoff anniversary is celebrated there.

Karl Imhoff may be known best in this country for his tank and his text. The two-story sedimentation and digestion tank bearing his name has had wide application. And "Sewage Treatment," on which Harvard's Prof. Gordon Fair collaborated, is widely used.

He is not as well known here for his water management in the Ruhr. The Ruhrverband, Ruhr River Board, is cited by one U.S. student of river sanitation as a "demonstration of water resources management of which there is no parallel elsewhere in the world." In a tribute to Karl Imhoff to appear in the April 7 issue of the Gas-Wasser Fach, E. J. Cleary of the Ohio River Valley Water Sanitation Commission, credits him as the man with the vision for the great Ruhr development.

Born in Mannheim, educated in civil engineering at the Technical University of Karlsruhe, his doctoral work started him in the field of biological sewage treatment. His report on Ruhr water and waste problems led him to head the Ruhr River Board. Since resigning as head of that board in 1934 he has been active as a consultant in Essen, where he lives.

(*Men and Jobs continued on page 96*)

The One Best Way to

CURE & PROTECT CONCRETE

New concrete must dry slowly for maximum strength. It also needs protection against marring and staining. Sisalkraft provides both . . . *and at low cost!* No kid glove handling with tough Sisalkraft . . . you can apply it *fast* and can even use it over again. Write us at Attleboro, Mass. for free booklet, "Curing & Protection for Better Concrete".

COPPER ARMORED SISALKRAFT

Permanent, pure electro-sheet copper bonded to Sisalkraft. For all concealed flashing and waterproofing at 1/5th the cost of heavy gauge copper. Won't kink, break or tear. Available in 1, 2, 3 oz. weights. Widths: 4", 6", 10", 12", 15", 20", 30", 60". Write for your nearest source of supply.

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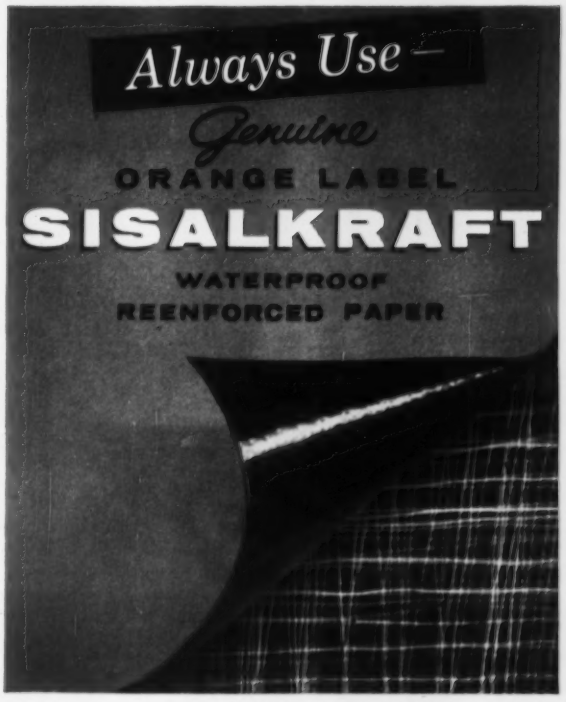


Schramm 125 Heavy Pneumatractor with front end loader and backhoe. This unit can dig to a depth of 9'-6". Buckets are available from 12" to 36" widths.

MAJOR BUILDING CONTRACTOR SAYS:

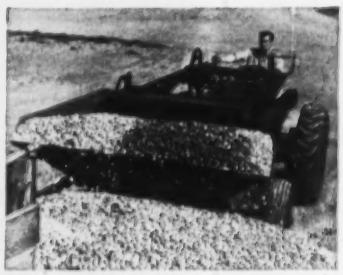
"For loading, hauling, digging, lifting... we use this self-propelled air compressor"

Big essential on most construction jobs is a mobile source of compressed air. Schramm Pneumatractor—air compressor and tractor combined—provides this source, and also serves as an all-'round construction tool.

Self-propelled, the Pneumatractor travels to any part of the job where compressed air is needed. And, with auxiliary attachments provided by Schramm, Pneumatractor becomes an *all-purpose* machine. You can drill or break out concrete with it—use it to load or unload materials, or move them from place to place. You can push, pull, dig and grade, too—even lift men and materials for work that otherwise would require a scaffold. Pneumatractor is the most versatile, flexible "work horse" you've ever seen—first on the job and last to leave because it does so many things so well.

Pneumatractor delivers 125 c.f.m. of compressed air at 100 pounds gauge pressure. Yet it costs much less than a 125 c.f.m. compressor and an industrial tractor. Write for free copy of Catalog 5540.

Your local Schramm Dealer is listed in the Yellow Pages of your telephone directory.



This one-yard bucket on this Schramm Heavy Pneumatractor can handle up to 4000 pounds. With bucket and backhoe, you get a unit that replaces many individual machines on the job.

This photo shows Pneumatractor's ability to cope with hard-to-handle materials. Other attachments include dozer blades, material buckets, sweepers, snow plows, drills and many more.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

620 North Garfield Ave. West Chester, Pa.

Brig. Gen. W. E. Potter

Named Governor

Gen. Potter assigned to Canal Zone. Gen. Galloway gets Missouri post.

The U. S. Senate last month confirmed President Eisenhower's appointment of Brig. Gen. William E. Potter as Governor of the Canal Zone.

Gen. Potter, now division engineer in the Corps of Engineers' Missouri River Division, Omaha, Neb., will succeed Maj. Gen. John S. Seybold, who has retired. The Missouri River post will be assumed by Brig. Gen. Gerald E. Galloway, who is presently assistant commanding general at Fort Belvoir, Va.

As Governor of the Canal Zone, Gen. Potter will be civil administrator for a population of 50,000 as well as engineer in charge of the Panama Canal.

His various assignments have included duty as Assistant Chief of Engineers for Civil Works, district engineer in Kansas City, Mo., and division engineer in Anchorage, Alaska. During his association with the Missouri River Basin, work was begun on the Kansas City floodwall and protection system and construction was completed on the Gavins Point, Garrison and Fort Randall Dams.

Currently serving his second term as chairman of the Missouri River Basin Inter-Agency Committee, Gen. Potter is a member of the Board of

(Continued on page 79)

This time and money-saving use of Stang wellpoints on a pipeline crossing of the Santa Ana River in California, for contractor Ukropina, Polich, & Kral, provided the ideal solution to an exceptionally tough water handling problem.

See cover picture and story on this Stang dewatering project in the January 26th, 1956 issue of Engineering News-Record.

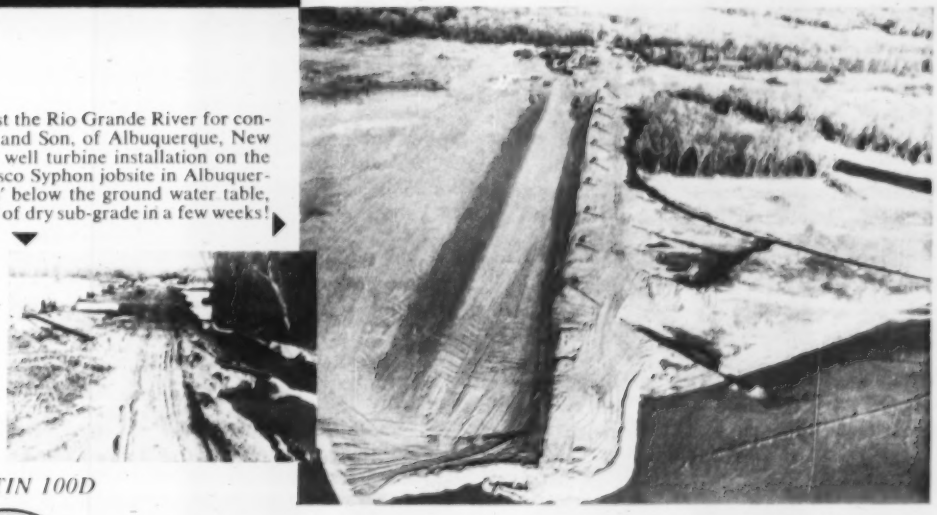
Only STANG

OFFERS EVERY TYPE OF DEWATERING EQUIPMENT *–ANYWHERE, ANYTIME!*

Turbine Jetting Wellpoint Pumps and Systems. Stang's Nationwide Depots stand ready to "bail you out" on a moment's notice

STANG offers the best equipped, most comprehensive dewatering service in the industry. *Any* type of equipment necessary for the dewatering of *any* type job is immediately available in *any* part of the country.

This *tailor-made* service is available as a complete engineering package, handling every detail from start to finish. It is also available on an equipment rental or outright sale basis. Either way, you are assured of the *absolute tops* in water handling. On your next job where a water problem is encountered, *call in a Stang representative*. You'll be amazed at how quickly, efficiently and economically a no-obligation analysis and recommendation is arrived at.



Stang won a race against the Rio Grande River for contractor D. D. Skousen and Son, of Albuquerque, New Mexico, with this deep well turbine installation on the Rio Grande at the Atrisco Syphon jobsite in Albuquerque. With sub-grade 38' below the ground water table, 10 pumps provided 800' of dry sub-grade in a few weeks!

WRITE FOR BULLETIN 100D

Putting water in its place

STANG ...anyplace!

562

JOHN W. STANG CORPORATION

Engineers and Manufacturers of Unwatering Equipment, Wellpoint and Pumping Systems
Unwatering Planning—Equipment—Service

BELL, CALIFORNIA	OMAHA, NEBRASKA	TACOMA, WASHINGTON	TULSA, OKLAHOMA
8221 Atlantic Avenue	2123 South 56th Street	2339 Lincoln Avenue	4026 South Urbana Street
Telephone: Logan 3-7421	Telephone: Walnut 7796	Telephone: Broadway 4362	Telephone: 7-8929

Here's Paul and Richard Slattery's new HD-11, pulling a 7½-yd Allis-Chalmers scraper on an eleven-mile road-rebuilding job between Savannah and Whitesville, Missouri.

Allis-Chalmers HD-11 Crawler Tractor

"BIG PERFORMER"

says Missouri contractor

That's co-owner Dick Slattery talking about the newest addition to his spread of Allis-Chalmers equipment.

"The HD-11 has given excellent performance and requires little maintenance," Dick goes on. "Among a lot of good things, I think the engine is tops. The lower RPM for one thing will give the tractor longer life. And its lugging power is terrific."

Chalk up another enthusiastic user of the new HD-11. And Dick knows what he's talking about. He started in business building farm ponds and clearing land with an army surplus Allis-Chalmers tractor in 1946. Now, with his father, he owns three crawlers, two big motor graders and a 7.5-yd scraper — all Allis-Chalmers.

Stop at your Allis-Chalmers Construction Machinery Dealer . . . see for yourself why the great new HD-11 is making such an impression on dirt movers like Dick Slattery.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

HD-11 owners know you just can't beat the combination of advanced-design features the HD-11 offers. The new engine with "follow-through" combustion . . . new long-life, ceramic-lined clutch . . . tough new track . . . all-steel box-A main frame . . . unit construction . . . lube features that let you leave a grease gun home for one to two weeks . . . these are just some of the many advantages that together add up to the finest tractor in its class.

HD-11
75 drawbar hp
20,500 lb

HD-11G
105 net engine hp
32,000 lb
2¼-yd bucket capacity

Engineers for Rivers and Harbors and of the Mississippi Basin Model Board. He is a graduate of the U. S. Military Academy and has a civil engineering degree from M.I.T.

Gen. Galloway, who becomes Missouri River Division Engineer on June 1, has been at Fort Belvoir since 1953. A former district engineer at Little Rock, Ark., and an assistant district engineer at Mobile, Ala., he served with the Ninth Army Corps in Korea. During World War II, he commanded the Third Engineer Special Brigade in the Pacific and supervised airbase construction in the Caribbean.

Men and Jobs Briefs . . .

• **Associations**—The Mississippi Valley Conference of State Highway Departments elects **John G. Butter**, chief engineer of the Iowa State Highway Commission, as president and **George M. Foster**, chief deputy commissioner of the Michigan State Highway Department as secretary-treasurer . . . **Charles W. Cooke**, Hartford, Conn., Public Works Director, becomes president of the Connecticut Society of Civil Engineers.

George A. Wilkinson of Marwell Construction Co., Ltd., Vancouver, heads the Pipe Line Contractors Association of Canada . . . **Arvel B. Klessig**, formerly with W. Hodgman and Sons, Inc., joins the Asphalt Institute as district engineer in Minnesota, Iowa and North and South Dakota.

• **Corps of Engineers**—**Col. Lawrence M. Hoover**, who's been serving with combat engineer groups in Korea, is transferred to the Southwestern Division, Dallas, as assistant division engineer, succeeding **Col. R. P. Kline**, who will report to the Trans-East District in Pakistan . . . **Col. Henry C. Rowland, Jr.**, is named district engineer at Wilmington, N. C.

The Portland, Ore., District announces two assignments for the Willamette basin multi-purpose projects: **Roy M. Cami**, chief of engineering for the Dalles project now nearing completion, will be project engineer for the $33 million Hills Creek Dam, and **Frederick E. Drager**, chief of the Dalles powerhouse construction, is named project engineer for the $37 million Cougar Dam.

• **Careers**—**Morris Doberne** leaves the California Division of Architecture to join Iwata and Jenkins, Los Angeles civil and structural engineering firm . . . **Kenneth M. Adelstein**, formerly

WIRE ROPE TALKS

SUBJECT:
STORING WIRE ROPE OUTDOORS

Practical hints on the use and care of wire rope by Robert M. Kilian, Chief Engineer of Leschen Wire Rope Division, H. K. Porter Company, Inc.

QUESTION:

What is the best method of storing wire rope outdoors?

ANSWER:

If you think of wire rope as a machine of many parts built to close tolerances, you quickly understand why it should be protected from outside exposure, particularly from dampness or humidity. Extended exposure under severe conditions will impair wire rope to the point of substantially reducing its effectiveness. After idleness and lack of care it may be of little use.

For example, rust tends to bind wires together so they are not free to move back and forth. Then they fail to adjust themselves when lifting or pulling a load. They do not move properly in operation around sheaves.

Lubrication and Cleaning

The outer layer of new wire rope to be stored on its shipping reel should be covered with a heavy protective lubricant. A generous application will tend to protect the entire length. "LePro" Wire Rope Protector, a Leschen product, is especially formulated for this purpose. You apply it cold, and it goes on quickly with a brush or by pouring slowly from a can.

Wire rope that has been used should be cleaned thoroughly with a wire brush, compressed air, or superheated steam. Then lubricate it with a penetrating lubricant that will coat all strand wires, internally as well as externally. Next coat the rope with "LePro" to seal in the other lubricant and repel penetration of moisture and fumes. Finally, wind the used rope on a reel. Following lubrication with "LePro" it is advisable to cover the rope on the reel with waterproof or tar paper. Seal the paper at the flange with "LePro."

Taking proper care of high-quality products like HERCULES Red-Strand wire rope is as important as selecting them in the beginning. You are money ahead on both counts.

Storing and Re-Use

Select a storage area that is clean and dry, and as well protected from the weather as possible. Avoid nearby acid fumes or other corrosive agents. They can cause embrittlement of the surface of the wires. Place reels on wood or metal supports.

When rope is returned to service, excess lubricant can be wiped off as the equipment is run slowly. Lubricants may pick up some dirt later, but this will cause far less damage than would the leaching effect resulting from the use of a solvent for cleaning.

High quality and performance built into Leschen wire rope is well worth preserving by proper storage methods. To obtain this quality in the first place remember to specify the rope with a RED STRAND—the symbol of highest quality wire rope for seventy-five years.

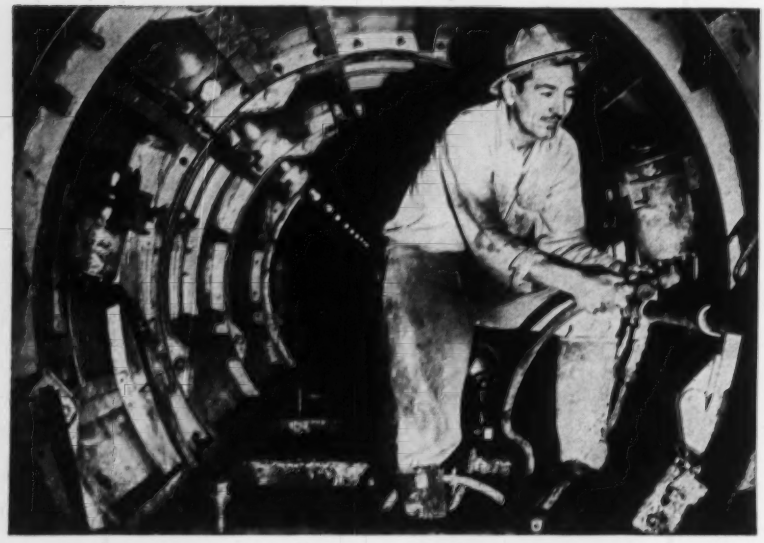
A Leschen district warehouse or distributor is nearby. See your Leschen man for other rope-saving suggestions—and for HERCULES Red-Strand Wire Rope.

Reprints of this "Wire Rope Talks" are available on request

LESCHEN
HERCULES *Red-Strand*® WIRE ROPE

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

(Advertisement)



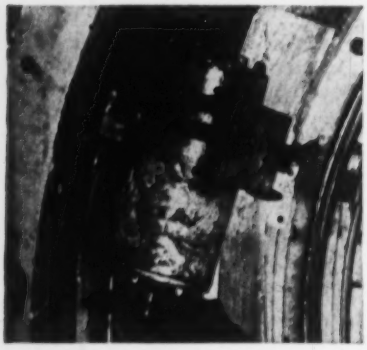
WORKER OPERATES one of the two Viber external form vibrators used on 2.9 mile sewer tunnel job. Vibrators are clamped to form and moved forward as concrete slope advances.

Two Movable External Vibrators Consolidate Concrete in La Cienega And San Fernando Relief Sewer

• **Major problem** of congested sewers in Los Angeles' heavily populated San Fernando Valley is being alleviated by a 2.9 mile long sewer tunnel bored through the Hollywood Hills.

The La Cienega and San Fernando relief sewer tunnel was holed through in horseshoe shape with a minimum diameter of 7 ft. 9 in. During lining, it was made circular with a 6 ft. diameter. Kemper Construction Company, Los Angeles, headed lining operations.

The Kemper crew prepared approximately 135 cu. yd. of concrete daily at a batch plant at the tunnel's entrance and hauled it by 24-gauge train to work site.



VIBER MODEL PX high speed pneumatic vibrator shown mounted on form in sewer tunnel. Model PX is used widely in tunnel lining operations.

Once concrete was discharged on top of T-Lock lining forms and flow commenced around full-circle forms, two external Viber Model PX high speed pneumatic vibrators were used to consolidate it rapidly and completely. Vibrators were clamped to the form and moved forward as concrete slope advanced. A Viber internal vibrator was sometimes used in conjunction with the external vibrators.

Highly experienced in tunnel lining, Kemper Construction Company designed the vibrator mounting clamp to fit the needs of this job. Clamp hangs from angle rail which extends length of form section. As slope advances, clamp may be released to switch vibrator to new position along rail without lifting it from rail.

Viber Model PX vibrators are used widely in tunnel lining operations. They are also used effectively in manufacturing concrete pipe and other precast members wherever reusable steel forms are set up on a production basis.

For further information on Viber's complete line of internal and external vibrators, contact your authorized distributor or Viber Company, Dept. 7-B, 726 South Flower Street, Burbank, Calif.

VIBER

CONCRETE VIBRATORS SINCE 1931

. . . Men and Jobs

with the Army's Research and Development Command in Ft. Eustis, becomes chief engineer in the Public Works Dept., Naval Mine Depot, Yorktown, Va. . . . **N. Costes,** materials engineer with the North Carolina Highway Department, joins Corps of Engineers in Wilmette, Ill. • **Business** – Tellepsen Petro-Chem Constructors, Houston, Texas, names **H. L. Watchous** construction manager. . . . **Herbert Petzold,** who has devoted his career to soils engineering, joins WM. Bros. Boiler & Mfg. Co., Minneapolis, as consulting engineer. Merritt-Chapman & Scott appoints **J. A. Dickinson** as executive assistant to Myles C. McGough, vice president in charge of industrial construction.

Obituaries

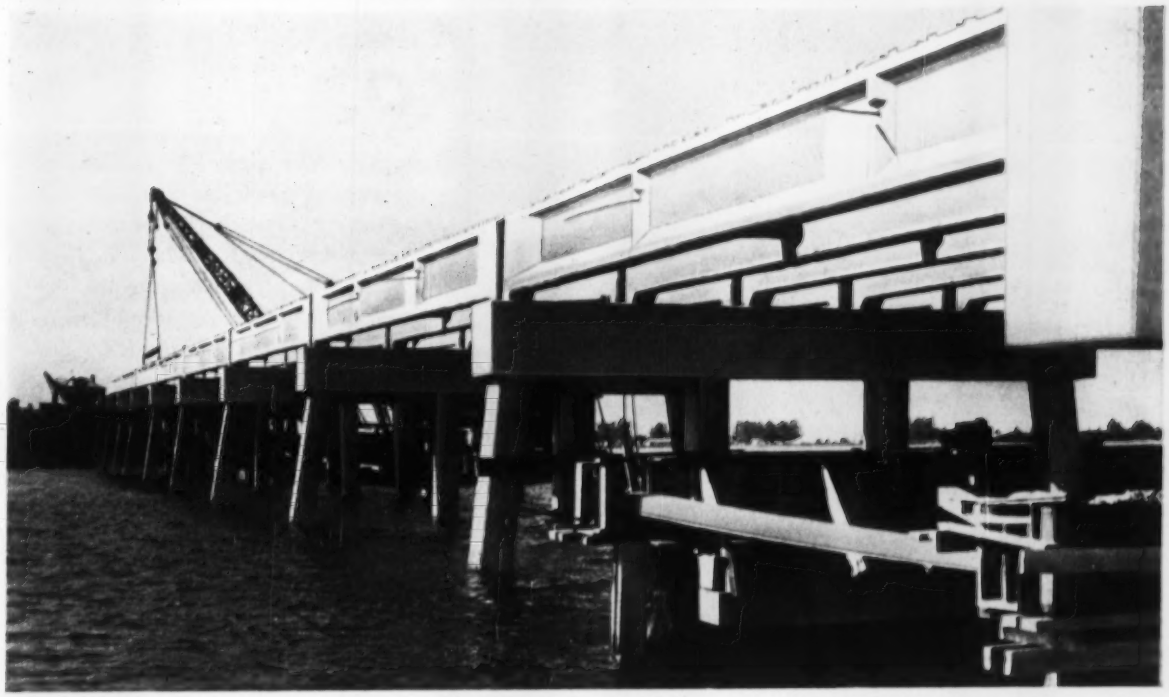
Charles U. Powell, 79, died March 26. He was credited with the street plan in New York City's sprawling Borough of Queens. As chief engineer of the Queens Topographical Bureau, he had introduced the so-called Philadelphia system of house numbering and street designation–house numbers correspond with cross-street numbers. Powell was a Cornell graduate who worked on New York subway construction beginning in 1902. In his borough topographic work from 1915 to retirement in 1942, he was responsible for laying out 2,500 miles of streets in 75,000 acres of Queens.

Curtiss A. Mees, 78, consulting engineer, died March 6 at Atlanta, Ga. A graduate of Rose Polytechnic Institute, Terre Haute, Ind., he had been, in addition to his private practice, associated with the Georgia Power Co., until two years ago.

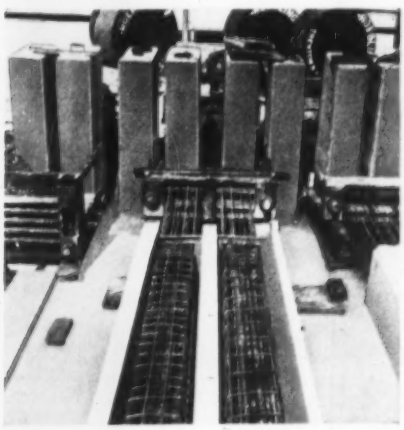
Robert von Ezdorf, 67, architect for McKim, Mead & White, New York, died March 24. A graduate of George Washington University, he designed, in association with various firms, many New York banks, the interior of the Waldorf-Astoria Hotel, and a building for the Wharton School of Finance and Commerce at the University of Pennsylvania.

Walter U. Wullner, 49, former chief architectural engineer for the Owens-Illinois Glass Co., died March 24. During his ten years with the company, he designed the concern's research center in Toledo, Ohio. Wullner had been in private practice since leaving the firm in 1954.

STANDARDIZED PRESTRESSED BRIDGE MEMBERS PAY OFF IN FLORIDA



Cortez Bridge, near Sarasota, Florida. 50 spans at 48'-0", 24' roadways, two 5'-0" sidewalks. Six 3'-4" deep I girders per span, each stressed with nine 7/16" diameter Roebling 7-wire stress-relieved pretensioned strands, and one post-tensioned Freyssinet cable using Roebling prestressed concrete wire. Poured-in-place deck slab forms composite section with girders to carry live load. 20" square piles stressed with eighteen of Roebling's 7/16" diameter strands have maximum length of 62'. Prestressed members fabricated by Florida Prestressed Concrete Co., Inc. of Tampa, Florida. Erection by Bay Dredging and Construction Company.



Pouring square pre-tensioned piles for Turnpike Bridges at plant of R. H. Wright & Son, Ft. Lauderdale, Florida. Production at this plant is well along with a requirement for 600 pre-tensioned bridge girders and over 200,000 linear feet of pre-tensioned piling.

In a recent lecture before the Thirty-Fifth Annual Meeting of the Highway Research Board, Mr. W. E. Dean, Assistant State Highway Engineer of the State of Florida, reported the following facts concerning the use of prestressed concrete for bridges in his State:

Florida has established three standard pre-tensioned bonded prestressed concrete girder sections which accommodate all loadings and all span lengths from 25 to 60 feet.

Engineers of the Florida Turnpike Commission have adopted the State's standard girders as alternates for I beams on all bridges where they are applicable on the new Turnpike. To December 15, 1955 bids were received on 22 bridges with 35 to 55 foot spans. On 13 bridges the prestressed alternate was low, for a total saving of $93,000. On the other nine the I beam alternate was not even bid.

On 10 typical projects let by the Florida State Road Department in 1954 and 1955 totaling 546 spans, prestressed concrete was lower than the I beam or reinforced alternate in each case.

Most of the prestressed bridges as well as many longer and shorter spans not of prestressed concrete are being supported on Florida's standard pre-tensioned bonded piles.

Roebling engineers will be glad to cooperate with you to help assure top results on any type of prestressed concrete application. Write Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, N. J.

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You play safe when you lay

River crossing of cast iron pipe line to carry sewage to disposal plant at Portland, Oregon.

Cast Iron pipe has long been recognized throughout the engineering profession as a rugged and adaptable material with proved ability to survive beam, compressive and shock stresses. Today's *modernized* cast iron pipe—centrifugally cast—is even tougher, stronger and more uniform in quality. Its effective resistance to corrosion, plus high strength factors, ensure long life with minimum maintenance cost. Yes, you play safe when you lay cast iron pipe—from your own standpoint and that of the taxpayers you serve. For further information, write Cast Iron Pipe Research Association, Thomas F. Wolfe, Managing Director, 122 So. Michigan Avenue, Chicago 3, Illinois.

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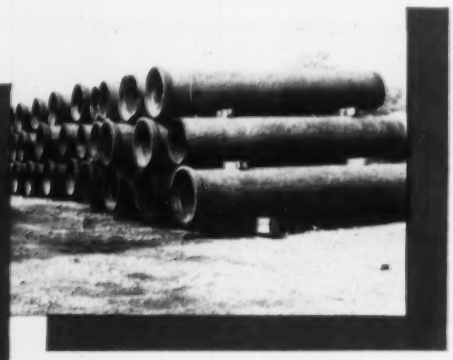
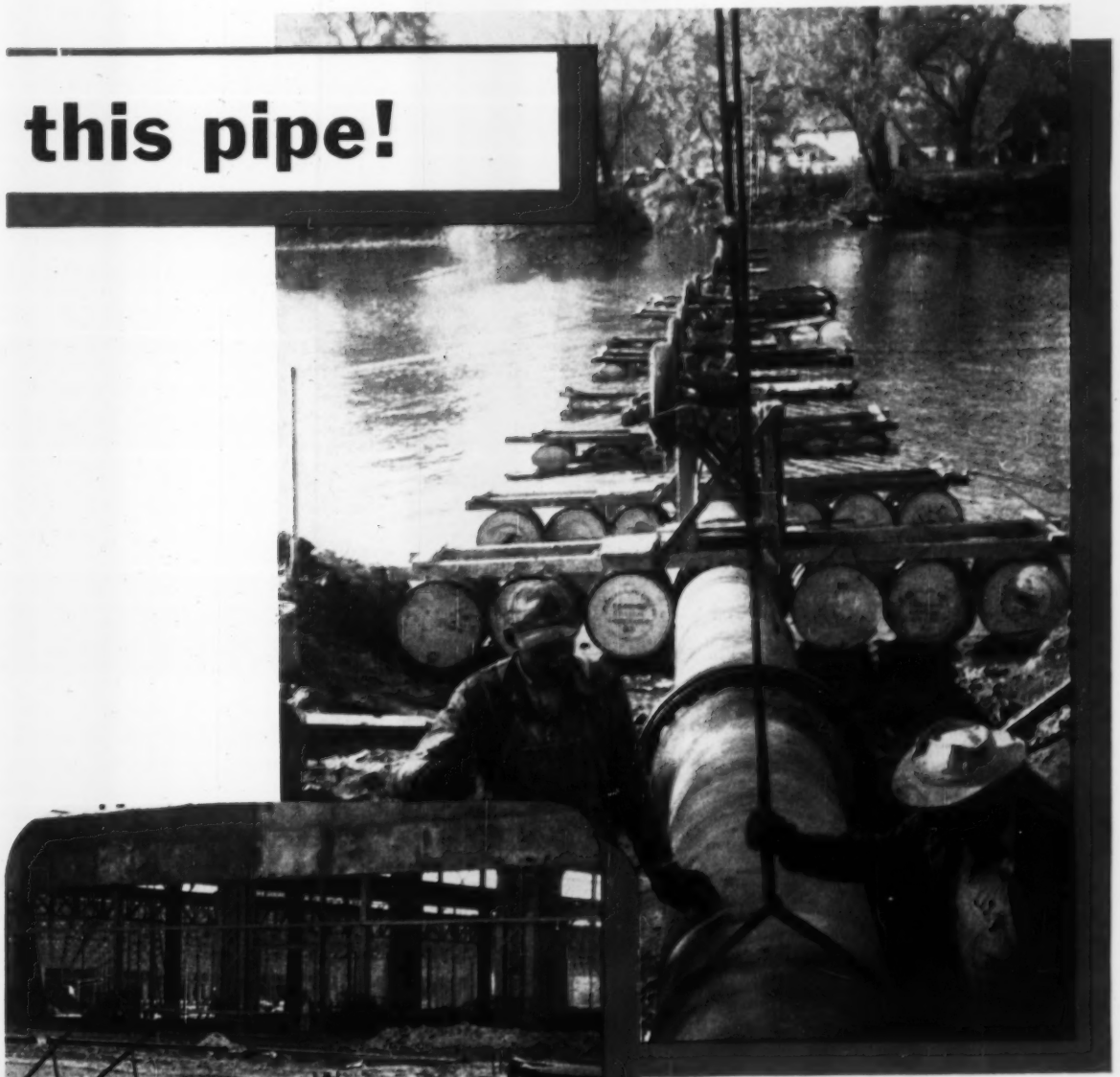
Installation of mechanical joint cast iron pipe for gas distribution at Syracuse, Nebraska.



About a half-mile of 49-year-old 24" cast iron pipe dug up, cleaned and re-laid by Cincinnati, Ohio, Water Department.

CAST IRON PIPE

this pipe!



Flexible joint cast iron pipe being installed across Cedar River at Cedar Rapids, Iowa.

Cast iron pipe for large automobile assembly plant in New Jersey.

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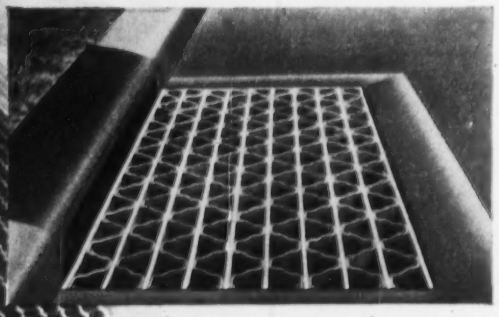

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Fins Guide Piles to Firm Bearing

Long, closed-end piles, driven through various strata to rock or gravel-boulder formations directly overlying bed rock very often present a difficult and challenging problem to the pile driving contractor. To improve his chances of getting a straight and undamaged pile down to bedrock in less time with fewer blows, a new pile tip has been invented and extensively tested—the Fin-type pile tip.

The Fin-type pile driving point is a steel casting in the form of a hollow inverted cone having on its circumference integrally cast fin-like lugs—usually four—extending below the vertex of the cone. The fins are wedge-

Photo by International-Harvester Co.

Two Mowers Are Better Than One

By using a hydraulically powered mower on the side and rotary mower on the rear, the St. Lucie County, Fla., highway department has developed a way to cut a 9-ft swath along road sides and ditch banks. The cutter bar mower is powered by a pump driven by a power take-off on the tractor; the rotary mower is connected to the independent power take-off on the tractor. While both mowers are operated at the same time, they are individually controlled.

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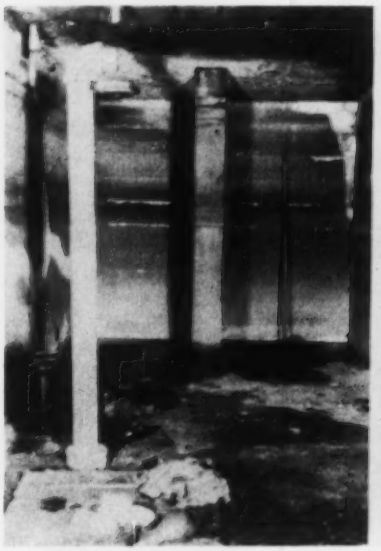
shaped of ¾-in. minimum thickness at the cutting edge. Plates of adequate thickness in this form of fins could also be welded to existing cone-shaped cast steel pile driving points. Sizes of pile tips correspond to the various diameters and thicknesses of pipe ordinarily used for piles or the various makes and diameters of mandrel driven shells. One modification is a tip in the shape of a frustum of a pyramid with the fins on the lateral edges.

In actual tests 57½-ton composite piles consisting of 10¾-in. OD pipe and step taper shells of an average combined length of 140 ft and with Fin-type pile tips have successfully been driven by the Raymond Concrete Pile Co. Piles had to penetrate compacted fill, layers of varved silt and clay, finally layers of hardpan and decomposed rock before reaching bedrock. The Fin-type pile tip was resorted to when piles driven with a flat plate tip or with an ordinary conical tip failed in large numbers despite extensive jetting.

Two piles were load-tested in the same building to 230,000 lb. One pile with a flat plate tip and the other with a conical tip. The two piles were of about equal length and were driven through the same type of material. The gross settlement of pile with flat tip was 0.708 in., net settlement was 0.420 in. For the pile driven with the Fin-type tip, the gross settlement was 0.276 in. and the net settlement was only 0.192 in.

The Fin-type pile tip acts as a drill, penetrating heavy layers of dense material such as coarse sand, hardpan or decomposed rock. Boulders, depending on their size and the material underneath them are either cut through or pushed aside. On reaching sloping bedrock the Fin-type tip does not slide off but embeds itself into it and grips it firmly. In general, the tips are not crushed by projecting rock and in almost all cases the piles are reported to have been seated straight and plumb regardless of the shape of bedrock.

The Fin-type pile tip, for which a patent is now pending, has been developed by Oscar Reich, civil engineer for the New York City Housing Authority.

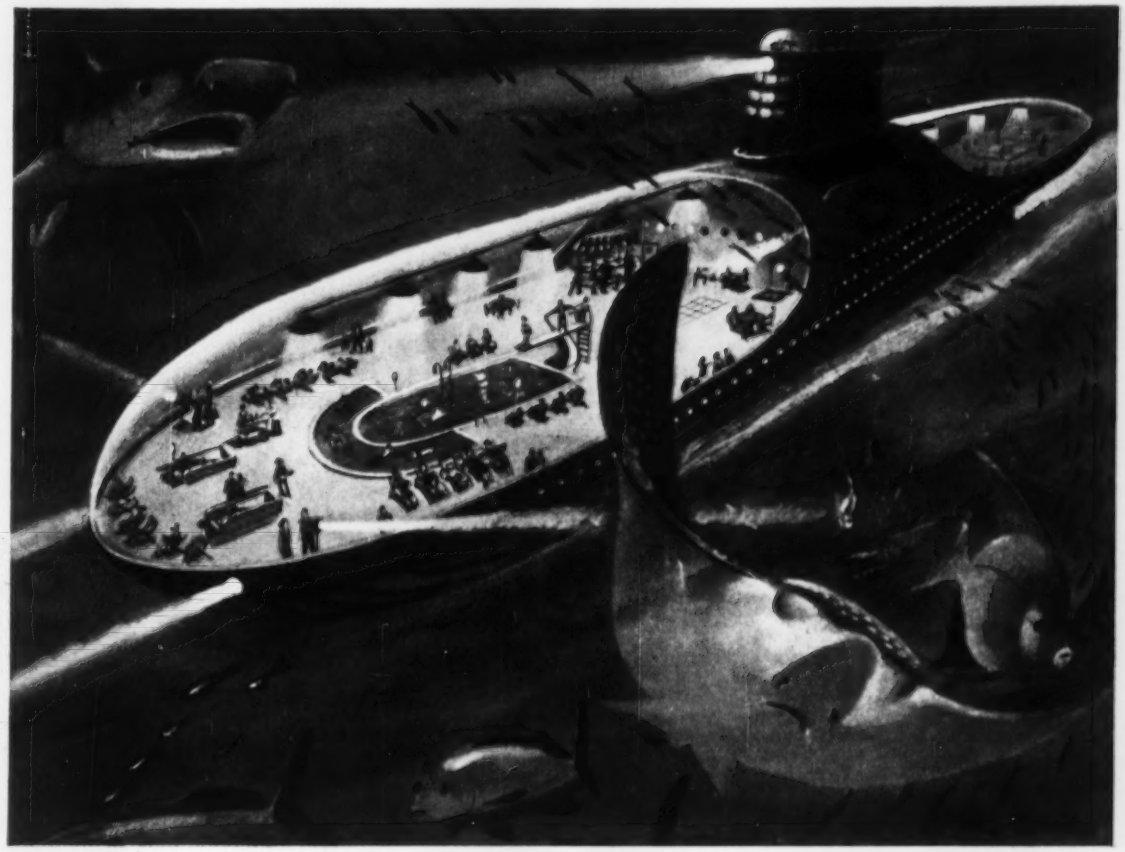


Hung Sheets Stop Leakage in Tank

A plastic-sheet lining stopped 2- to 3-gpm leakage from a 5,000-gal tank of reinforced concrete at a Logan City, Utah, diesel-electric plant.

The 21x6x6-ft tank is used for mixing hot water from the diesels with cold water to cool it before returning it to the engines. Differences in temperature inside and outside the 30-year-old tank had caused cracking of the walls and floor, leading to serious leakage.

The plastic sheeting, custom fabricated for the tank, is but 0.020 in. thick. It is suspended from redwood strips bolted to the walls along the top of the tank. Flanges were placed around the vertical pipes passing through the tank, and the drop in water level of ¼ in. now experienced from midnight to six a.m. is attributed to minor leakage in the pipes and valves of the tank's outlet system. Sheeting used was Krene, a product of the Bakelite Company.



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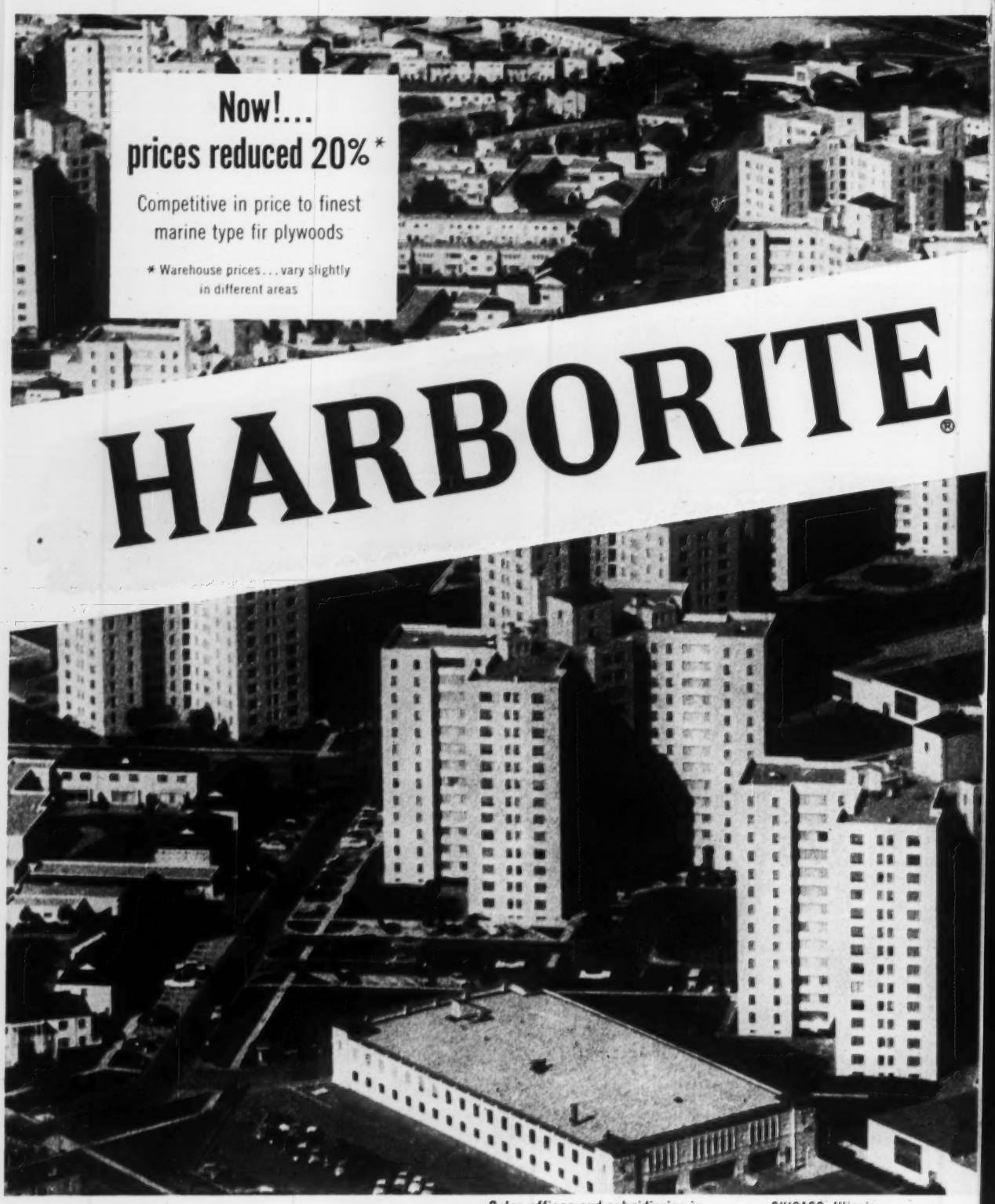

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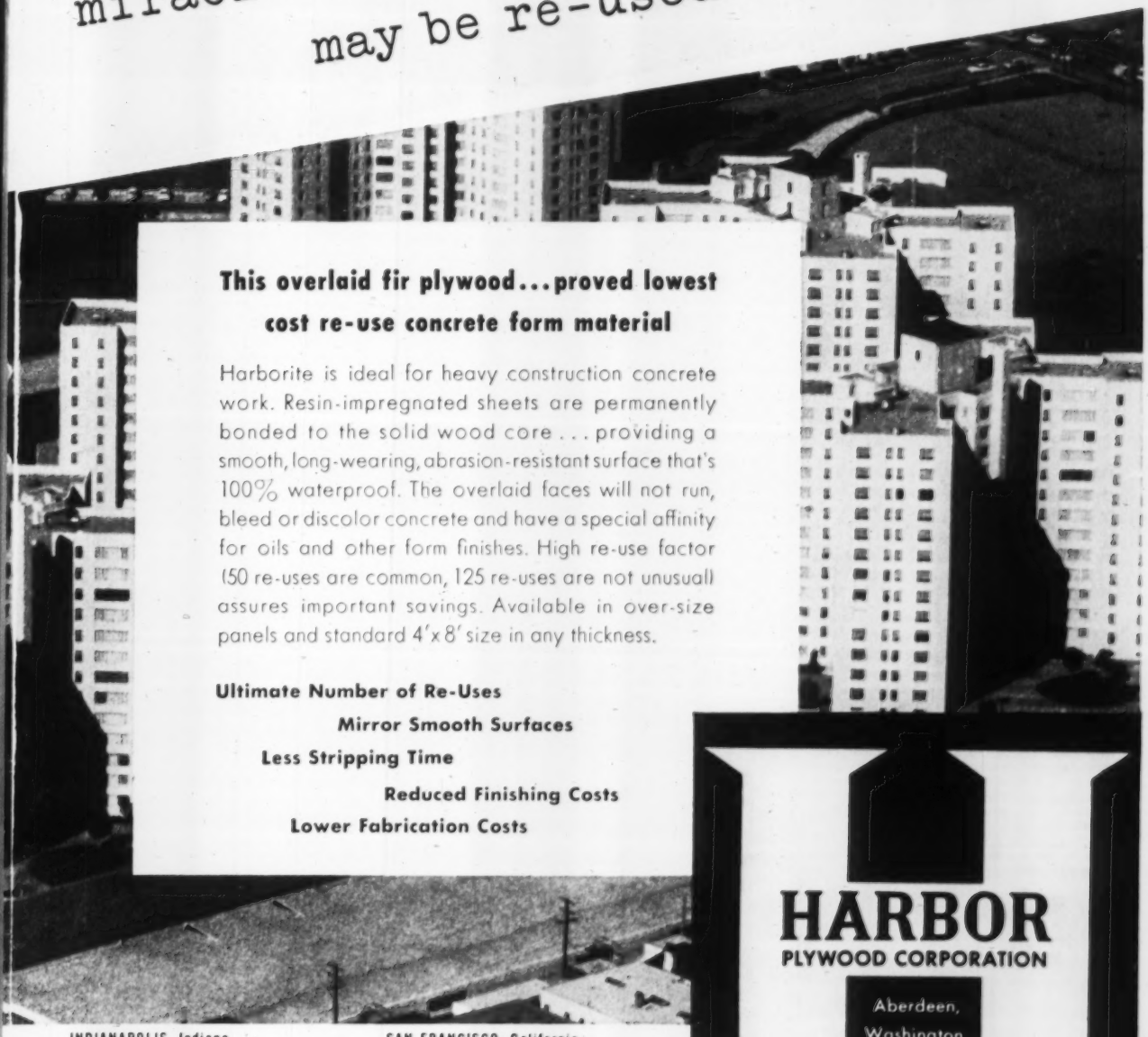

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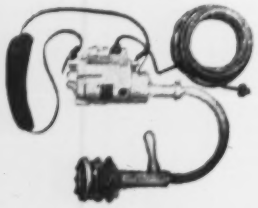
CONCRETE SURFACER
MODEL A



"Berg" equipment is used extensively for surfacing and finishing applications on concrete construction.

The many "BERG" Models available, permit exact selection for your particular application.

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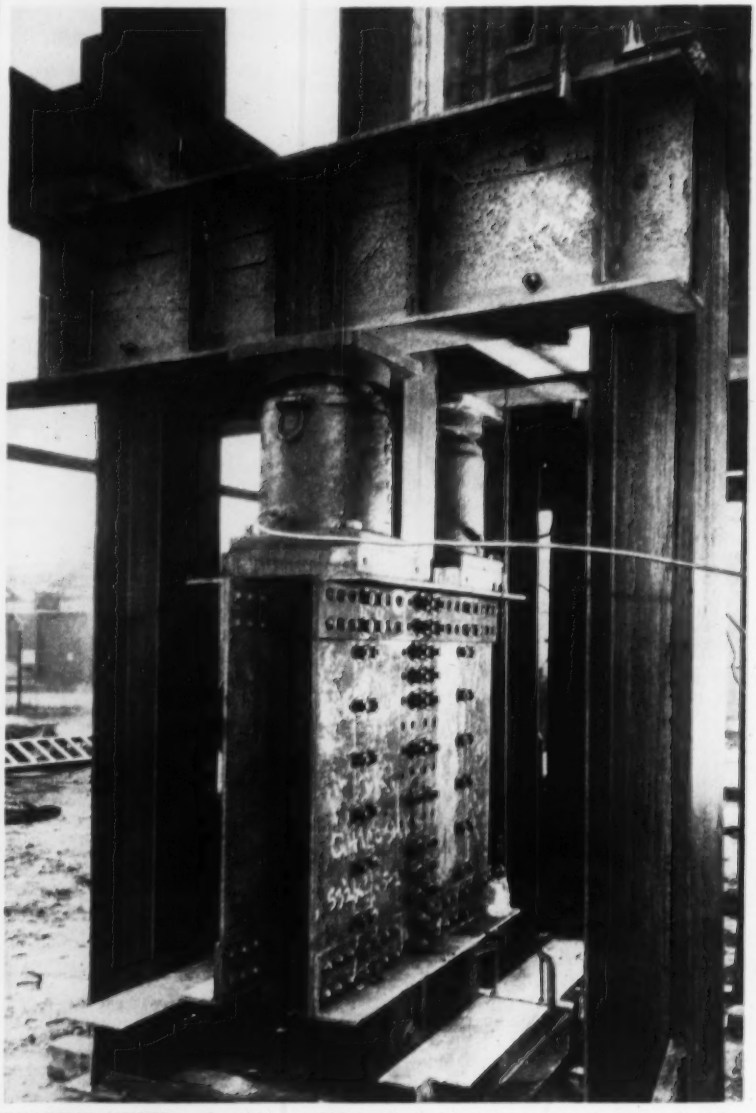
EASY, PROVEN WAY to PERMANENTLY BOND CONCRETE TO CONCRETE
WELD-CRETE®

Weld-Crete is the amazing liquid bonding agent which enables you to *permanently* bond new concrete *directly* to old concrete . . . or to most any other structurally sound surface . . . *without need for costly, time-consuming chipping, drilling, roughening, acid washing or scarifying of concrete base.*

Weld-Crete has equal bonding permanence all climates, all surfaces, all sorts of conditions. When used with quick setting cement topping you can lay new floors, ramps, driveways, etc. one day and run heavy truck traffic over them the next. Get facts from your building materials supply dealer or write Larsen Products Corp., Box 5756-I, Bethesda, Md.

TYPICAL **WELD-CRETE** APPLICATION

National Brick Co., Terra Cotta, D.C.
Here Weld-Crete was used to bond new ¾" concrete topping directly to old, badly chipped and spalled floor slab which had been subjected to ceaseless heavy truck traffic. Plant shut-down time eliminated as Weld-Crete enabled National's own mechanics to do job over week end.



BEARING TESTS made with two 500-ton hydraulic jacks, jacking beams and anchor piles disclosed that steel H-beam piles could take three times the design loads.

Tests Tell H-Pile Story

Foundation engineers may be able some day to sit in the comfort of their offices and determine friction-pile lengths—no bearing tests in the field will be necessary.

Just-released results of two-year bearing tests on steel H-beam piles conducted in Chicago gives some hope that this may yet come about. The investigation was carried out by Armour Research Foundation of Illinois Institute of Technology for the United States Steel Corp. Its main objective was to determine the suitability of steel bearing piles in Chicago's Loop area, where distances to bedrock are often 100 ft. or more.

Nine test piles—three each of 10, 12 and 14-in. steel H-piles—were subjected to loads. One set of 10-12-14-in. piles was driven open-ended to a resistance of 12,000 psi; another similar set was driven to the same resistance, but this set had closed ends

Lake View Sand and Gravel Company
Fond du Lac, Wisconsin

Trucks Run 100,000 Miles Before Overhaul with Cities Service C-300 Motor Oil!

CHART SHOWS LAKE VIEW'S 13-YEAR SAFETY RECORD

"Cities Service helped keep machinery in safest operating condition," says Manager Eugene Clement.

	SAFETY			
Year	Construction 1st Place	Group Awards 2nd Place	Building Supply 1st Place	Group Awards 2nd Place
1943			X	
1944	X		X	
1945	X		X	
1946	X		X	
1947	X			
1948		X		X
1949	X			X
1950	X		X	
1951				X
1952			X	
1953				X
1954				X
1955		X	X	

NOTE: Lake View also received a "No Accident Award" for years, 1945, '47.

Lake View Sand and Gravel also chalks up phenomenal 13-year safety record.

At Lake View Sand and Gravel Company, dump trucks run almost as much while standing as while moving.

"So you can see," says Manager Eugene Clement, "that the 100,000 mile overhaul period we're getting with Cities Service C-300 Motor Oil is really something!

"It's actually twice our former mileage with another brand of motor oil! And it certainly hasn't affected our safety record. For 13 years we've won Wisconsin safety awards—and we couldn't possibly have done it without top-notch maintenance and top-notch lubricants.

"Trojan H-2 Multi-Purpose Grease is an example of good, simplified lubrication. We use it for wheel bearings, water pumps and general chassis lubrication and find it not only offers greater water resistance, but also pumps easier in low temperatures. It's advantages like this that make me mighty glad I switched to Cities Service."

This is another report of a firm's outstanding results with Cities Service products. Find out what these products can do for you. Talk with your Cities Service representative or write: Cities Service Oil Co., Sixty Wall Tower, New York 5, N. Y.

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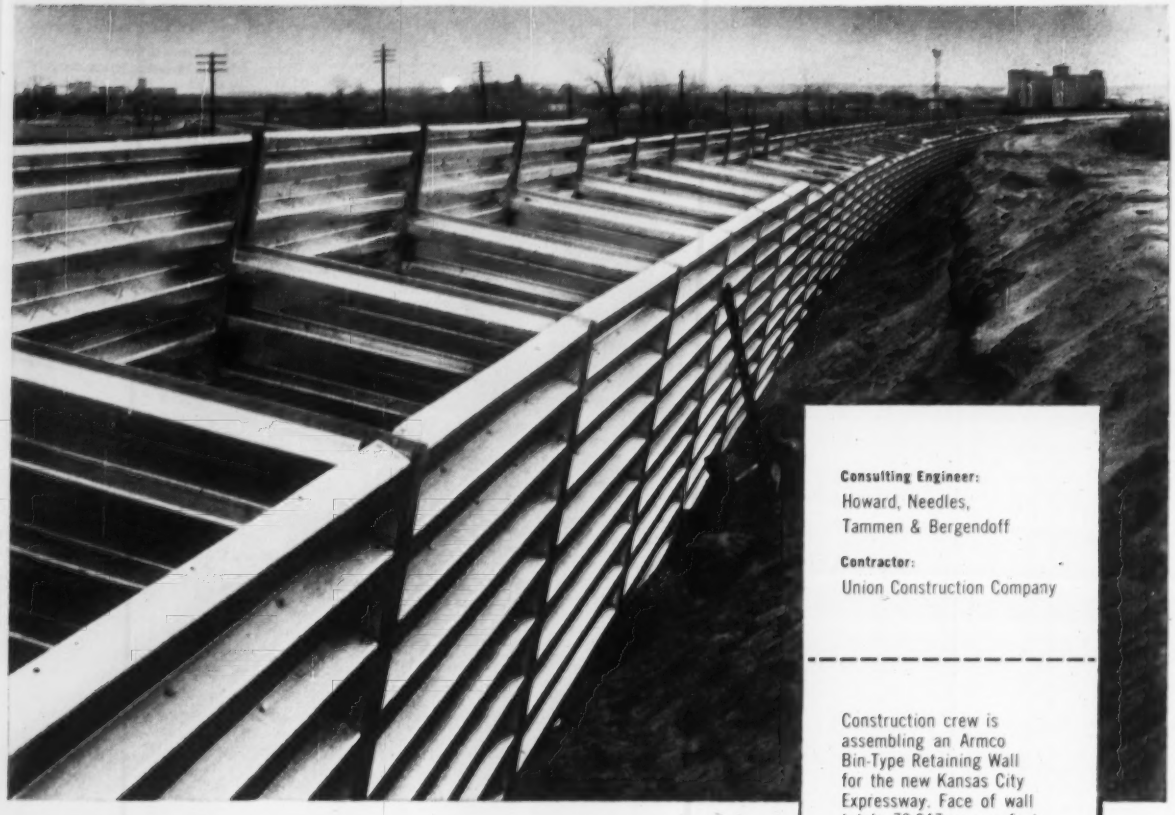

Consulting Engineer:
Howard, Needles,
Tammen & Bergendoff

Contractor:
Union Construction Company

Construction crew is assembling an Armco Bin-Type Retaining Wall for the new Kansas City Expressway. Face of wall totals 73,247 square feet.

A MILE OF ARMCO BIN-WALL

is used on Kansas City Expressway

Exactly 5,230 lineal feet of Armco Bin-Type Retaining Wall is being used for a single installation on the Kansas City Expressway to gain maximum elevated roadway width without encroaching on the adjacent railroad right-of-way. Eleven different wall heights were required, ranging from 5⅓ feet to 18⅔ feet.

Where Are Armco Walls Used?

With the new and wider highways of today, engineers are continually faced with the problem of making full use of right-of-ways without encroaching on adjacent property. To do this, it is often necessary to hold back fills or stabilize steep embankments. Armco Bin-Walls are ideal for such jobs.

Why Are Armco Walls Better?

Armco Bin-Walls are of all-metal cellular construction, tightly bolted together to make an integral unit. Earth is backfilled into the bins to provide the necessary strength and stability. Dangers of cracking, breaking, bulging or overturning are minimized. Assembly is easy and fast.

For more data on sizes, engineering details and standard designs of Armco Retaining Walls, write us. Armco Drainage & Metal Products, Inc., 4716 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO BIN-TYPE RETAINING WALLS

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—heavy steel plates welded to the ends of the piles; and a third similar 10-12-14 series was driven open-ended to refusal in bedrock.

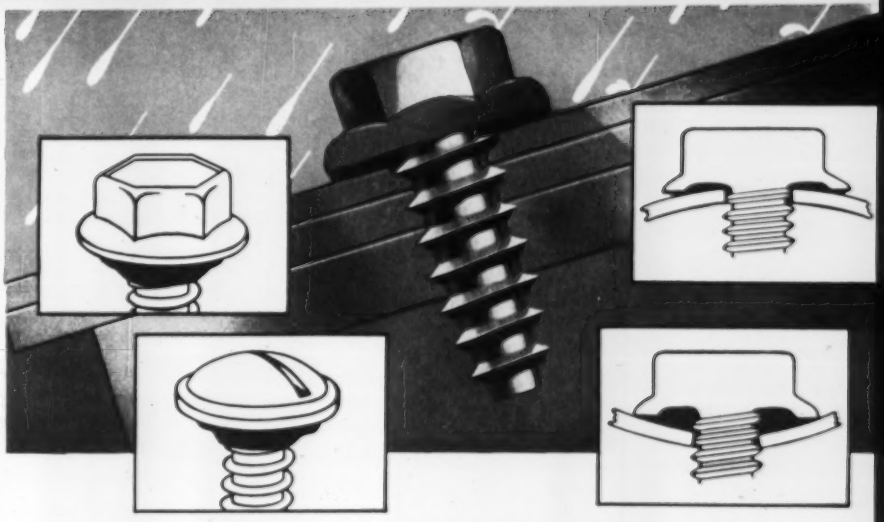
The 10-in. pile which was driven open-ended to refusal in bedrock had electric strain gages along its length. Piles stresses were read while driving, as well as during loading.

The test yielded these results:

- Piles having the most penetration in dense strata carry the greatest loads.
- Closing the ends of a pile materially decreases the frictional forces developed.
- The piles have adequate lateral support at all times, even in the relatively soft clays near the surface.
- Laboratory shear strengths of the soil determined from test borings compare reasonably well with shear values indicated by the strain gage measurements of instrumented pile.
- Though the instrumented pile was driven to refusal in dense material and loaded to destruction, readings showed that only about 14% of the total load was transmitted to pile's tip.
- Three of the test piles, loaded to destruction, did not fail until the stresses were equal to or above the yield point. One 14-in. H-beam pile that was driven 105 ft to bedrock carried over three times its design load before failing at a load of 1,270 kips.
- Eight of the nine piles tested exceeded the requirements of the Chicago building code. The one exception, a 14-in. pile with closed ends, failed by excessive net settlement at a load of 740 kips. Revised in 1949, the code permits a maximum allowable stress of 12,000 psi.
- The mechanism of load transfer to the soil was found to be entirely different for a pile under static loading than under dynamic loads. Static load transfer is achieved largely by frictional soil forces along the length of the pile, while under dynamic loads, the force is transmitted to the end of the pile and transferred to the soil in bearing. Existing pile formulas do not take into account these greatly different load-transfer characteristics, and by considering the pile as a rigid body, neglect the stress transmission through the pile.

In all, 17 test piles were driven at the site. The additional 8 piles were 14-in. H-beam sections that served as anchor piles. Driving resistances were calculated prior to testing by the Engineering News Formula.

The industry-backed project was under the supervision of Robet L. Janes, assistant manager of Armour Research Foundation's propulsion and structural research department.



New *Tuff-Tite** Fastener Prevents Leaks—Protects Surface—Absorbs Shock—Stops Squeaks

Tuff-Tite is a new multi-purpose fastener with a one-piece metal head and assembled neoprene washer that gives you quick, secure, economical, leakproof fastening of metals and plastics.

Use of Townsend's Tuff-Tite makes possible watertight fastening of galvanized steel, protected metal, stainless steel, aluminum, plastic and other roofing and siding materials at substantial savings over conventional fasteners.

Leaks between the head of the screw and the metal washer are impossible because they are made as one piece. When this fastener is tightened, the pre-assembled neoprene washer is trapped and controlled by an undercut in the washer head. The neoprene is forced into the hole and around the threads to form a watertight and airtight seal.

Tuff-Tite fasteners provide surface protection in assembly of appliances and similar products. The neoprene washer provides a cushion that permits tight seating without cracking or chipping porcelain enamel and other fine finishes.

Where vibration noise is a problem in automobiles, railroad passenger cars and machinery, the cast neoprene washer on Tuff-Tite fasteners acts as a shock absorber—eliminates squeaks and chatter.

Tuff-Tite fasteners are available as self-tapping screws, thread cutting screws, drive screws, machine screws, stove bolts, wood screws, nails and special products. They are made of carbon, alloy and stainless steel, aluminum, copper and other metals in a variety of head styles.

To learn more about how Tuff-Tite can increase your fastening efficiency—improve your products, use the coupon below or write.

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Motor graders have come a long way since their first crude beginnings; and in the modern Austin-Western Power Grader many important features are teamed-up to give performance other graders cannot hope to equal.

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. . . so Austin-Western provides . . .

. . . All-Wheel Drive, giving tremendous climbing power to the front drivers, with a "live" front end that drives its own weight; instead of a dead front end that has to be pushed around by the rear drivers. All-Wheel Drive results . . .

. . . in tremendous load-moving ability by applying more power at the blade – in all materials, and under all operating conditions–power that is made still more effective by Torque Converter drive.

MANEUVERABILITY

is needed, too . . .

. . . and with All-Wheel Steer, Austin-Western graders are twice as maneuverable as those with front steer only; steering that lets you "swing that rear end" for handling every job with maximum efficiency.

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is another important factor . . .

The Extreme Blade Reach; a plus benefit on many jobs, such as finishing without leaving tire marks.

The High Lift Blade; for handling any degree of slope, from flat to vertical.

The Precision Sideshift of the blade; for keeping it under perfect control at all times.

The Completely Reversible Blade; for those rare occasions when it is necessary or desirable to grade in reverse.

The Power Graders That Have Everything

TO OUTPERFORM

WESTERN POWER GRADER

MANAGEMENT

—or control—of the machine is also important, and Austin-Western provides . . .

. . . Full Hydraulic Control—finger-tip management for instant response and precision operation. There's no lost motion—nothing to tire the operator. It's this hydraulic operation that makes Austin-Western graders so easy to manage. Now, the Blade Action . . .

. . . teams up with All-Wheel Drive and All-Wheel Steer so that all work together to move more material—and in more places. The working together of these three features—mobility, maneuverability and blade manipulation—is called . . .

CONTROLLED TRACTION...

. . . with the rear end swung to either side, although the grader moves straight ahead. All-Wheel Drive and All-Wheel Steer team up with the blade—so that the *rear* drivers *push* behind the *toe* of the blade—and the *front* drivers *pull* ahead of the *heel* of the blade; and the Austin-Western grader *moves straight ahead*—under perfect control—with no side slip. Whatever the material, Controlled Traction moves more of it—farther and faster.

Yes, every Austin-Western Grader has four BIG "M" features that are *teamed to outperform* . . . the extreme mobility and earth-moving ability provided by All-Wheel Drive and the Torque Converter . . . the extraordinary maneuverability resulting from All-Wheel Steer . . . the unusual versatility of blade manipulation . . . and the easy management of all functions by full hydraulic control.

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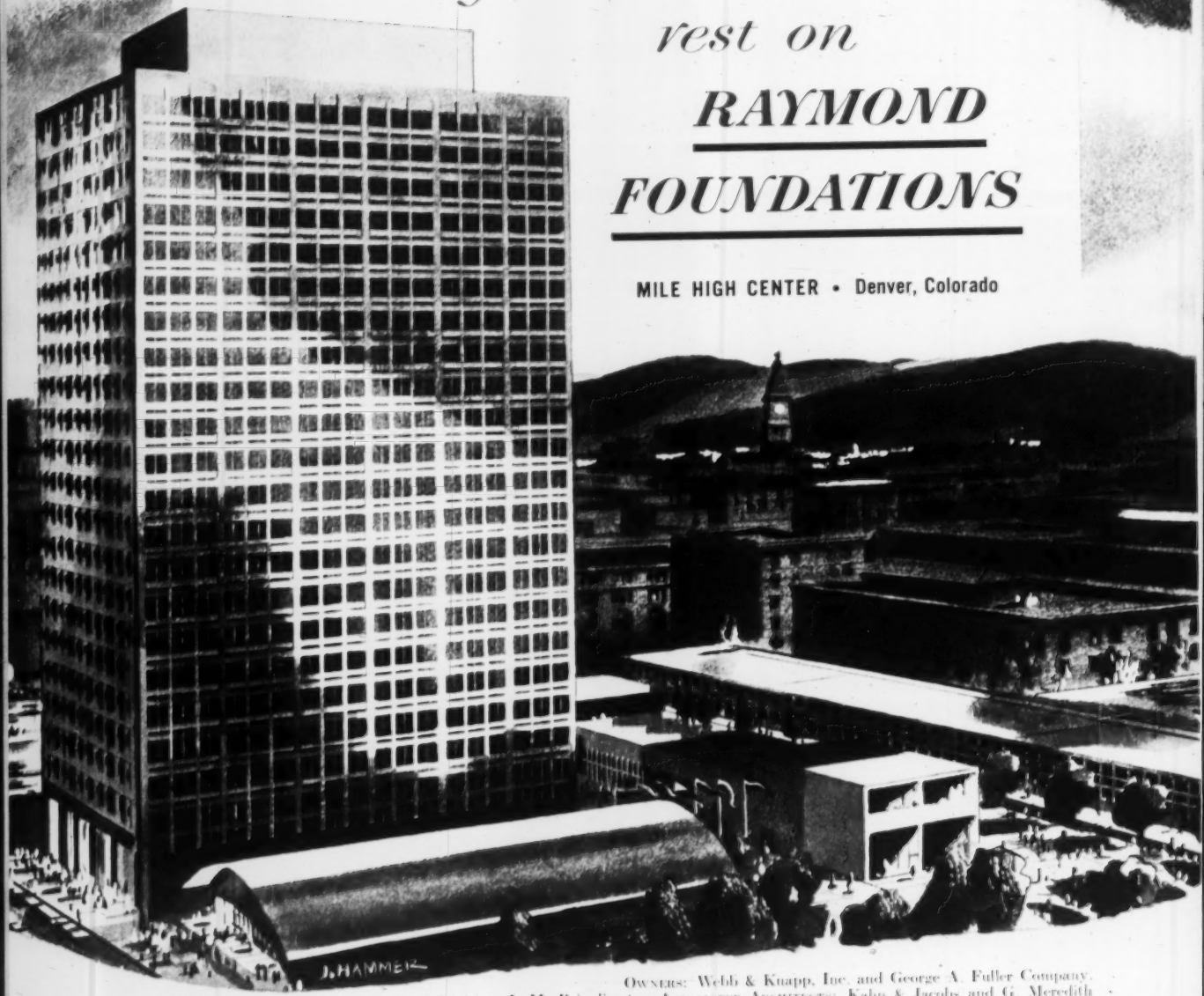

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Books

A Look At Construction Law

LEGAL CASES FOR CONTRACTORS, ARCHITECTS, AND ENGINEERS—By I. Vernon Werbin. 487 pp. McGraw-Hill Book Company, Inc., 330 West 42 Street, New York 36, N. Y. $6.00.

Werbin has again drawn on his 40 years of experience in the construction field—both as a licensed engineer and a practicing attorney—to point up the legal aspects of some of the everyday problems faced by contractors, engineers and architects.

The result is a useful guide to the legal rights and liabilities that exist in 52 different kinds of situations. Among the problems discussed are the validity and enforceability of oral contracts, the right to withdraw bids because of errors, the meaning of substantial performance, liability for negligence and defective work, relative rights of generals, subs and sureties, damages for delayed performance, and some of the remedies available when contracts are breached in various ways.

As the title suggests, the book is indexed by both cases and topics—consists largely of digests of court decisions. There is, however, some independent discussion of statutory law—such as the Statute of Frauds governing enforceability of oral contracts. Here and there, the author adds his own comments. Bulk of the cases selected deal with problems of contractors.

Intended as a practical guide to laymen and not as a substitute for legal advice, the book supplements two of the author's previous publications—"Legal Phases of Construction Contracts" and "Legal Guide for Contractors, Architects, and Engineers". Chapter heads of each are listed in the back of the new volume.

A Refresher in Drawing

ENGINEERING DRAWING AND DESCRIPTIVE GEOMETRY—By R. P. Hoelscher and C. H. Springer. 510 pp. John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y.

Here is a drawing text, while written for the freshman engineer, also of use to the practicing engineer. Included in one volume are basic engineering drawing, descriptive geometry, and specialized drawing in various engineering fields. Specialized chapters cover making charts, diagrams, maps, plus architectural, structural, pipe, machine, tool, welding, and even patent office drawings. In addition, there is a chapter on reproduction of draw-

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One of the big advantages of Naylor Spiralweld pipe and one-piece Naylor Wedge-Lock couplings is the speed with which lines can be made up in dredging operations and for handling air and water on construction jobs.

This pipe and coupling combination gives you lines that can be installed easier and faster than by any other method. A hammer is the only tool needed to assemble or disassemble connections. In tunnel work, lines hug the wall and space is saved as they can be made up with only one side of the pipe in the open. In addition to faster installation, there is the factor of high salvage and re-use value to consider.

For the complete story, ask for Bulletins No. 507 and No. 513.

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ings, and an extensive 54-page appendix.

The text has been aimed at understanding of principles rather than development of manual skills. The subject matter has been presented from the viewpoint of an engineer rather than from that of a draftsman.

All the theory of descriptive geometry necessary for the solution of problems in design and drafting, including perspective, has been incorporated in five of the book's twenty-nine chapters.

In addition, the book is profusely illustrated with many visual-aid drawings to explain such concepts as sectional views, orthographic and auxiliary projections. A large, 11 x 8-in. page size lends itself to big, clear illustrations.

The authors, both members of the engineering faculty at the University of Illinois, claim that there are sufficient problem sections in each chapter to cover at least four semesters of work without repetition. Workbooks designed for use with this text, and emphasizing the application of theory to practical problems, are available for both drawing and geometry. New workbooks will be published annually until there are at least four different collections for each course. These may be ordered from Stripes Publishing Co., 17 Taylor Street, Champaign, Ill.

The Village Skyscraper

THE STORY OF THE TOWER—By Frank Lloyd Wright, 134 pp. Horizon Press, Inc., New York 36, N. Y. $6.

Text, drawings and photos—including some fold-out color plates—follow the progress of the 19-story Price Tower, Bartlesville, Okla., through conception, planning and actual construction.

Excellent photography, by Joe D. Price, son of the owner, records the erection of the tower in a series of shots beginning with an aerial view of the site. Chronologically arranged construction shots follow. Floor plans interspersed with the photos add clarity and detail to the presentation. The concluding pictures of the completed building are accompanied by interior photos showing some of the Wright-designed furniture.

Chief among the tower's claims to engineering distinction is its structure. Four reinforced concrete walls, extending radially from an open center, rise full height through the tower and function as a cross-shaped or finned column. At each floor level, reinforced concrete slabs cantilever from the fins,

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Coming down to cases, your paver operator carries *your* profit in his hands. Because if he can keep the paver going at top speed all day long, he sets the pace for the entire paving crew—can save you money!

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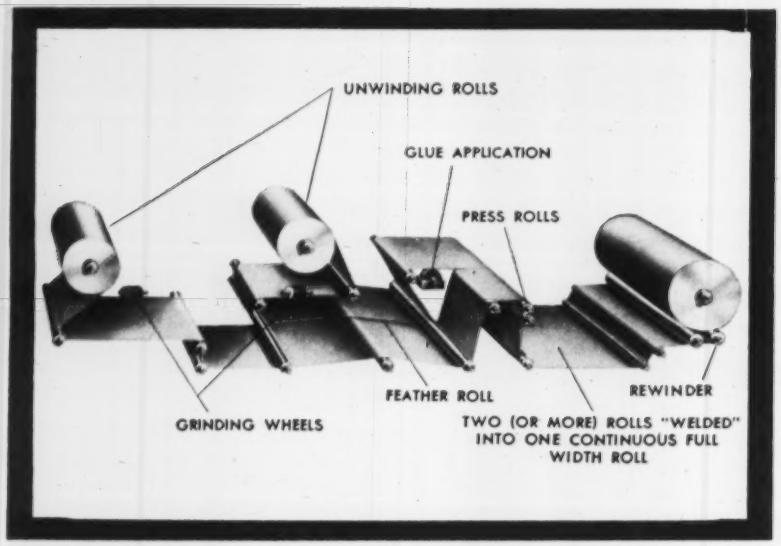
MAKING "ENDS" MEET



When paper is sold in widths other than standard machine trim, narrow end rolls are left over. The manufacturer can either store these rolls in valuable warehouse space in anticipation of future sale or return them to repulping machine for remaking into paper. Both of these alternatives are costly procedures. If the unsalable end rolls amount to as much as 10% of production, a 100 ton mill in reality becomes a 90 ton mill.

Now, the Oliver Webwelder paper splicer makes "ends" meet by welding two or more of these end rolls into a single full-width roll of salable size and quality. This unique operation is accomplished by grinders which reduce the thickness of the matching edges, an adhesive applicator, and a series of compression rolls. The resulting seam, which is stronger than the original stock, is barely visible.

The welding of end rolls for the paper industry may be only of academic interest to you. However, it does point out Dorr-Oliver's continuing search for improved techniques in the fields we serve.

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reaching outward as much as 20 ft. Parapet walls, on the slab perimeters, are cast integrally with the slabs. The building's copper and glass skin is suspended from slab extremities. The tower is said to weigh only about six-tenths as much as conventional masonry and steel construction.

Another unusual feature of the "village skyscraper" is its mixture of commercial and residential occupancy. Three quadrants comprise office space while the fourth is made up of duplex apartments, each with a living floor and bedroom mezzanine.

A corner of the mezzanine projects through the 2-story windows that join successive living floors. The projecting corner serves as an outdoor balcony for the master bedroom.

Photo captions and text, besides specifically describing Price Tower, have sufficient scope to relate the edifice to Frank Lloyd Wright's world-famous beliefs on what any building should be.

Miscellaneous Notes

• **"Federal Aid for Highways"** is the title of another useful pamphlet issued recently by the National Highway Users Conference (National Press Building, Washington 4, D. C.). It describes the federal-aid systems and the methods employed in allocating federal aid to the states under the many federal-aid highway acts. Also, in tabular form, it gives the amounts of federal aid granted to the states annually during the years since 1917. Major developments in legislation bearing on federal aid for highways also are listed.

Reports and Pamphlets

ANNUAL HIGHEST AND LOWEST STAGES OF THE MISSISSIPPI RIVER TO 1953—Available from Office of the President, Mississippi River Commission, Corps of Engineers, U. S. Army, Box 80, Vicksburg, Miss. $1.00 (payable to Treasurer of U. S.)

STAGES AND DISCHARGES OF THE MISSISSIPPI RIVER 1954—Annual compilation by the Mississippi River Commission of stream gaging records for the main stream and outlets and tributaries. Available from Office of the President, Mississippi River Commission, Corps of Engineers, U. S. Army, Box 80, Vicksburg, Miss. $1.00 (payable to Treasurer of U. S.)

A HIGHWAY PROGRAM FOR KENTUCKY—Prepared by the Automotive Foundation, 200 Ring Bldg., Washington 6, D. C.

K&M Corrugated Asbestos Sheets, used as siding on the Operations Center of a southeastern utility company, complement the clean, modern lines of the building. These sheets are also used on a pitched roof, not shown in the photograph. Engineering and supervision of construction: Stone and Webster Engineering Corporation. Applicator: Whatley Roofing and Sheet Metal Works, Tampa, Florida.

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Building a new plant? Modernizing your present one? In either case, you'll gain important cost and other advantages with K&M Corrugated Asbestos-Cement Sheets. They cannot burn, can't rot or corrode—withstand the ravages of time and weather year after year. Because K&M Corrugated Asbestos-Cement Sheets rarely require maintenance, *never* need protective painting, their upkeep is held to the barest minimum.

Easy to apply. These corrugated sheets offer big savings in application costs. They go on quickly, are easily sawed, drilled, and fitted on the job.

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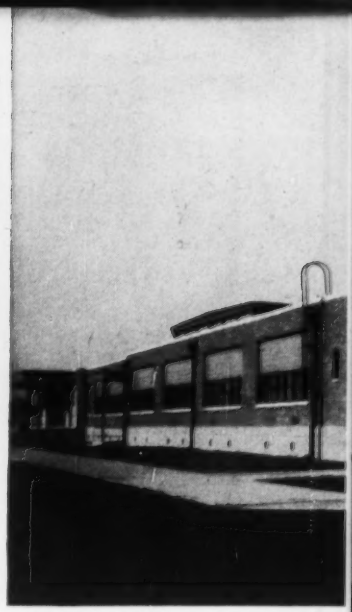
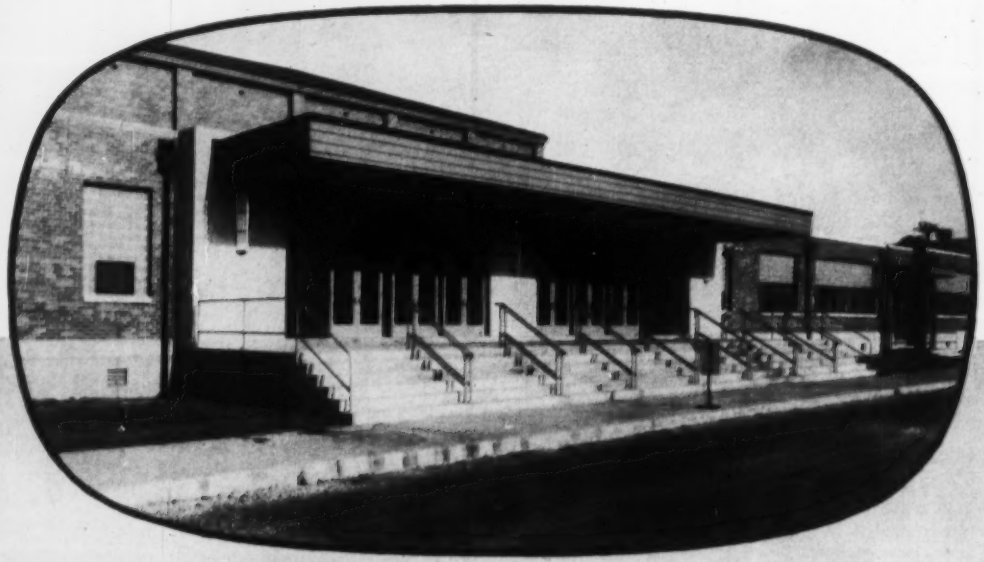
THE MAIN ENTRANCE of Assumption High School. The architects were Paul J. Saunders and Eugene S. Johnson. The engineer was John P. Nix. The general contractor was Wm H. and Nelson Cunliff Co.

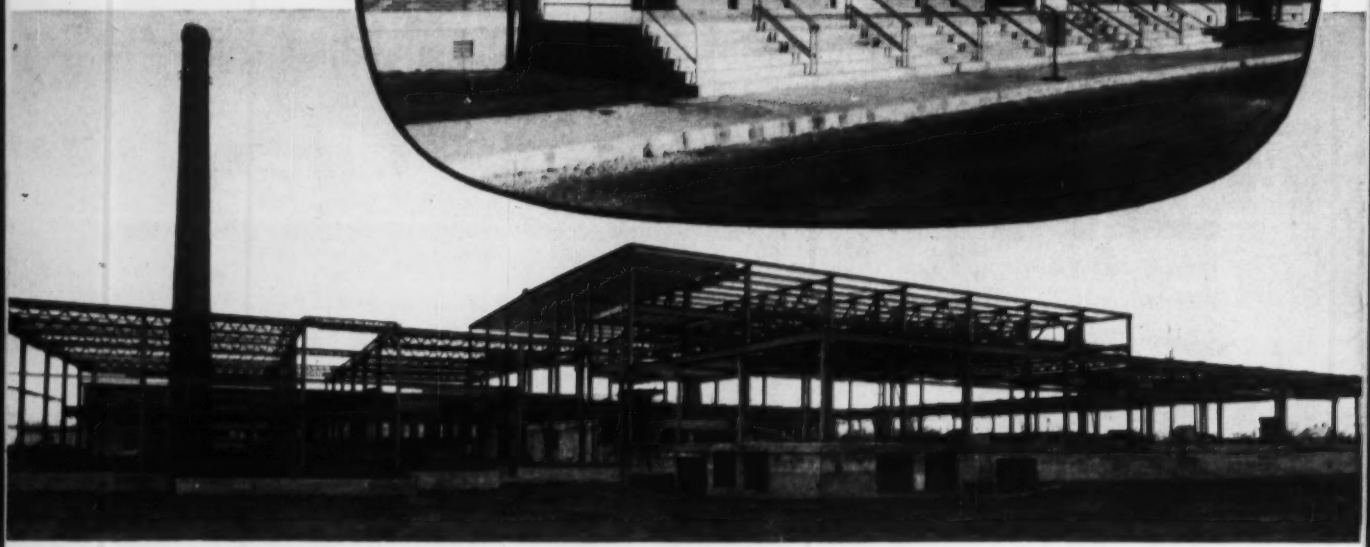


TWO STORY ACADEMIC UNIT, connected to the one story unit to which a second floor may be added in the future.

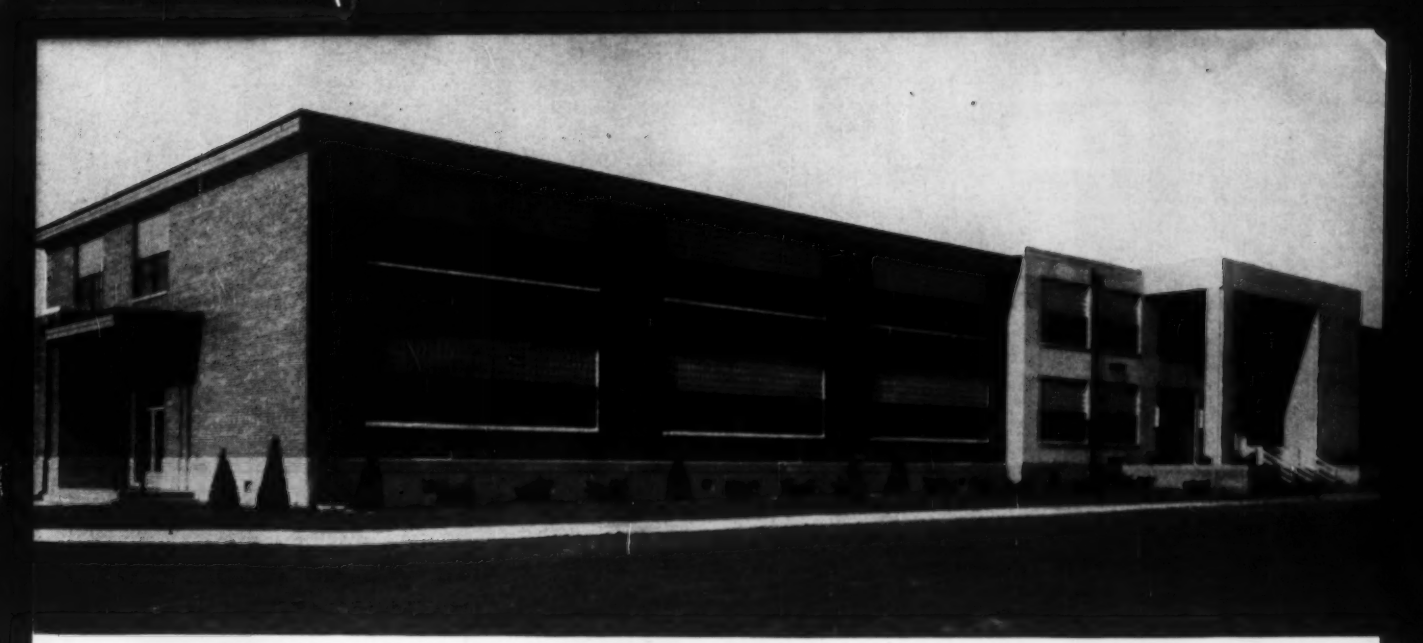
New High School designed with

ENTRANCE to the gymnasium unit. The small doorway to the right leads into a classroom area.





THE STRUCTURAL FRAMEWORK during erection. The more than 348 tons of USS Structural Steel, used in the building, were fabricated by The Mississippi Valley Structural Steel Co., St. Louis, Mo.



future expansion in mind

The Assumption High School of East St. Louis, Illinois, was built to accommodate 650 students with provisions for expanding horizontally and vertically to provide facilities for an eventual one thousand students.

The school consists of three units: an academic unit containing classrooms; a gymnasium unit including gymnasium, cafeteria, shops, and laboratories; and a Brother's House, independent of the other buildings, which contains living quarters for 24 Brothers. The academic unit has provisions for expansion to the east. In addition, a second floor can be added to the present one story portion. The Gymnasium Unit is designed so that there is sufficient physical education, shop, laboratory, and cafeteria space for additional students if classroom facilities are increased.

Structural Steel was used exclusively in the framing of this new school because of its versatility, its tremendous load bearing capacity, and its economy of use—qualities that make it ideal for *all* types of school construction. Small wonder that today's architects and engineers are specifying Structural Steel frameworks for more and more schools, churches, and small buildings. Just look at these advantages:

1. Structural Steel is the strongest, yet most economical of load bearing materials.

2. Structural Steel will withstand more abuse than other structural materials, effectively resisting torsion, tension, compression, and shear.

3. Once enclosed in buildings, it lasts indefinitely—requiring no maintenance.

4. Structural Steel may be riveted, bolted or welded . . . can be erected in any weather in which men can work.

5. Steel members are fabricated indoors; therefore, weather can have no effect on the quality of workmanship.

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SEE The United States Steel Hour. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

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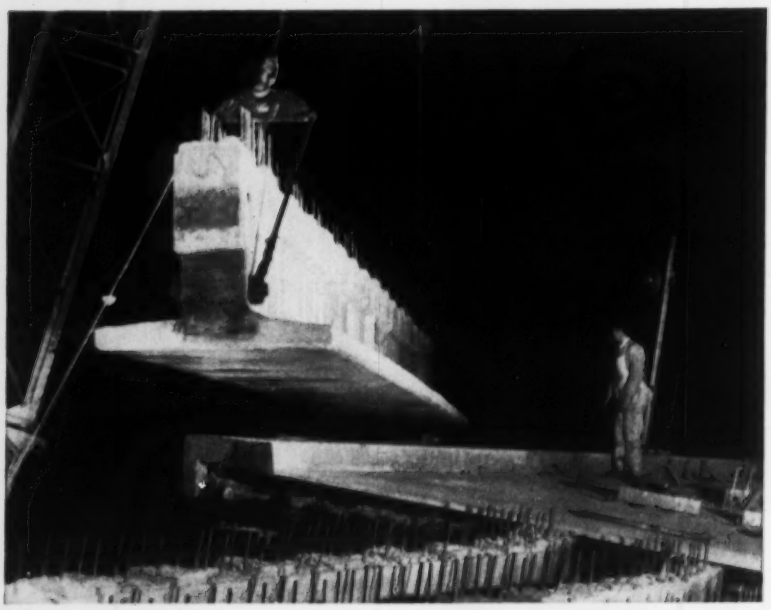
UNDERSIDE OF PRESTRESSED SPAN shows bottom flanges of girders and general shape of step bearings. Roadway is 28′ between curbs. California Division of Highways photos. Warren B. James, resident engineer; Charles McClosky Company, contractor.

Prestressed girders span freeway traffic

IN THE 798′ SEPARATION which completes the San Bernardino-Santa Ana Interchange in Los Angeles, two spans had to cross two lower levels of freeway which carry a 24-hour traffic of 38,000 to 40,000 vehicles on each leg.

The problem was to build these two spans uniform in line and material with the rest of the poured-in-place structure without using falsework in the freeways below. It was solved with 48′ long prefabricated prestressed girders, 8 in each span. These were set at night and the deck was then poured in the usual manner.

The wide, thin bottom flange of the girders, containing ½″ shear and temperature bars on 12″ centers, necessitated a very workable, as well as high strength concrete. This was obtained with a 7-sack mix which developed 4000 psi working strength when properly processed in truck mixers of certified design, capacity, mixing speed and accuracy of water control.



5 TO 6 HOURS, AT NIGHT, PLACED EACH 8-GIRDER SPAN: Girders were cast on ground below and prestressed when concrete reached 3500 psi. With 35 and 40 tons on their three prestressing cables the 48′ long girders showed only ⅛″ rise at center. Note 44″ wide flange only 4″ thick at the edges, 6″ thick at stem. Stem is 36″ high, 12″ thick at the ends.

You have a right to insist on this Rating Plate. It certifies compliance with the high industry standards maintained for your protection by the Truck Mixer Manufacturers Bureau.

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Legal

Contract Modifications Should Be in Writing

A case that arose in New York last year illustrates the practical difficulties that follow an attempt to modify orally the terms of a written contract.

The action was brought by the owners of a co-operative apartment house to recover damages as a result of a claimed failure of the promoters of the project to complete the building according to contract.

The written contract provided that the building was to be deemed completed when the certificate of occupancy was issued, when the mortgage was paid and a permanent first mortgage was obtained. The court held that when these three conditions had been met, the promoters had performed their part of the contract.[1]

The owners claimed that there was an oral agreement whereby the developers were to furnish certain equipment which they had failed to do. The contract contained a provision to the effect that no change or modification of the terms and conditions of the agreement would be binding upon the sellers unless the same were in writing and signed by the representative of the sellers.

The court pointed out that under such contract provision and under New York Personal Property Law there can be no oral modification of the contract unless the promise to give something in addition to what is called for by the written contract is supported by a valuable consideration.

(1) 20 East 74th Street, Inc. v. Minskoff, 126 N.E. 2d 532, Court of Appeals of New York, April 14, 1955.

No Contract Is Created Unless Offer Accepted

"It is an elementary principle of contract law that acceptance of an offer must be unequivocal and unqualified in order to bind the offerer and result in a valid contract. No contract comes into being if the offeree's acceptance is not as broad as the offer."

A federal case[1] illustrates the point. Approached by a general contractor for the installation of a sprinkler system, a subcontractor wrote that he'd do the work under the terms of the national standard contract for such jobs. Instead of accepting the sub's offer as given, the general asked for supplementary material—namely, a progress schedule. The sub didn't send one, nor would he sign a contract different from the one he'd offered to sign.

The general claimed the negotiations had resulted in a contract and that the sub's failure to go ahead with the work was a breach of contract. But the court dismissed the suit the general filed on the ground that no contract existed.

In quoting the law, above, the court referred to these: Northeastern Construction Co. v. City of Winston-Salem, 83 F. 2d 57, 104 American Law Reports 1142, and 1 Williston Contracts, Sec. 73.

(1) Nolan Brothers, Inc. v. Century Sprinkler Corp., 220 F. 2d 726, April 1955.

Recovery Under Surety Bond On Subcontractor's Default

A prime contract with the United States Government, called for by the Miller Act, required the prime contractor to furnish a bond for the protection of all persons supplying labor and materials. Part of the work was subcontracted to another contractor who was required to and did furnish a surety bond guaranteeing completion of the work and payment for all labor and materials supplied to the subcontractor.

The subcontract provided that the subcontractor would make prompt payment for materials and labor furnished and that failure on the part of the subcontractor to submit satisfactory evidence of payment of all indebtedness for work included in any monthly payment would give the prime contractor the right, on two days written notice, to terminate the employment of the subcontractor and engage some one else to complete the work.

Shortly after the subcontractor started the job, he had labor trouble and a work stoppage occurred. The subcontractor then made an arrangement with another contractor to take over the job, agreeing to pay him on a cost-plus basis. This arrangement was approved by both the prime contractor and the subcontractor's surety.

Several months after the change was made, the prime contractor sent a letter to the original subcontractor, requesting that he furnish the prime contractor within two days, satisfactory proof that payment had been made for all work and materials, payment for which had been included in previous monthly payments. The letter, also stated that upon the subcontractor's failure to comply with

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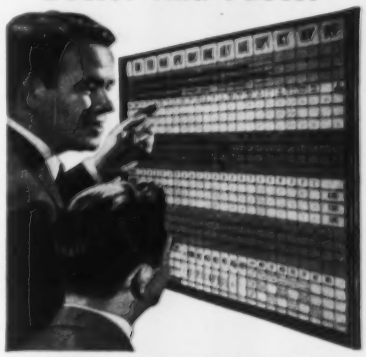

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(Based on Company File #114697)

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He was in charge of customer payments. Also handled our accounts receivable records. He took in the money, issued receipts, credited the customers' accounts in full. *Then he entered smaller amounts in the cash book.* The difference went into his pocket.

Annual audits? Of course we had them. But he beat them year after year by an absurdly simple method...

He'd prepare a listing of accounts receivable. And an adding machine tape of totals. Nothing wrong with the listing. It was complete. Correct to the penny.

His gimmick was in the grand total on the tape. He fixed that to balance with the amount indicated as outstanding by the cash receipts record. Who'd question the total on an adding machine tape?

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Fortunately, this company was protected against embezzlement losses by a Hartford Blanket Fidelity Bond.

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the request, the prime contractor would exercise its right under the contract to take possession of the subcontractor's tools and equipment and have some one else complete the job.

At the time the latter was sent, the subcontractor owed trucking bills in excess of $7,000. The subcontractor never replied to the letter and the prime contractor employed another contractor to complete the work.

The lump sum price of the subcontract was $157,500 but the amount the subcontractor would have been entitled to had he completed the work, due to changes, would have been $199,503. The actual amount paid by the prime contractor for the performance of the work was $367,571, which was $168,068 in excess of the amount that the subcontractor would have received had he completed the contract.

The prime contractor brought an action against both the subcontractor and his surety to recover the excess cost. The court held tha the prime contractor was entitled to recover the excess cost from the subcontractor but that its judgment against the surety was limited to $157,500, that being the lump sum set forth in the subcontract when it was entered into. It was also the amount stipulated in the performance bond.[1]

(1) Veneto v. McCloskey & Co., 128 N.E. 2d 237, Supreme Judicial Court of Massachusetts, July 18, 1955.

Partnership Principles Govern Joint Ventures

An investment in the business enterprise of another does not in itself create a joint venture. The law requires the elements of a partnership.

In a case before a federal court, one person had loaned money to another for the production of goods the lender wanted to purchase. Interest was charged on the loan. The court held that a joint venture did not result.[1]

Quoting from another case[2], the court said: "To constitute a joint adventure, there must be the elements of a partnership. As between the parties themselves, there must have been an intention to form a partnership as expressed in the contract or gathered from acts of the parties and circumstances which may interpret such agreement. As between themselves or third parties, there are certain requisites necessary before the law will in any event regard the relationship as that of partners. The requisites of a partnership are that the parties must have joined together

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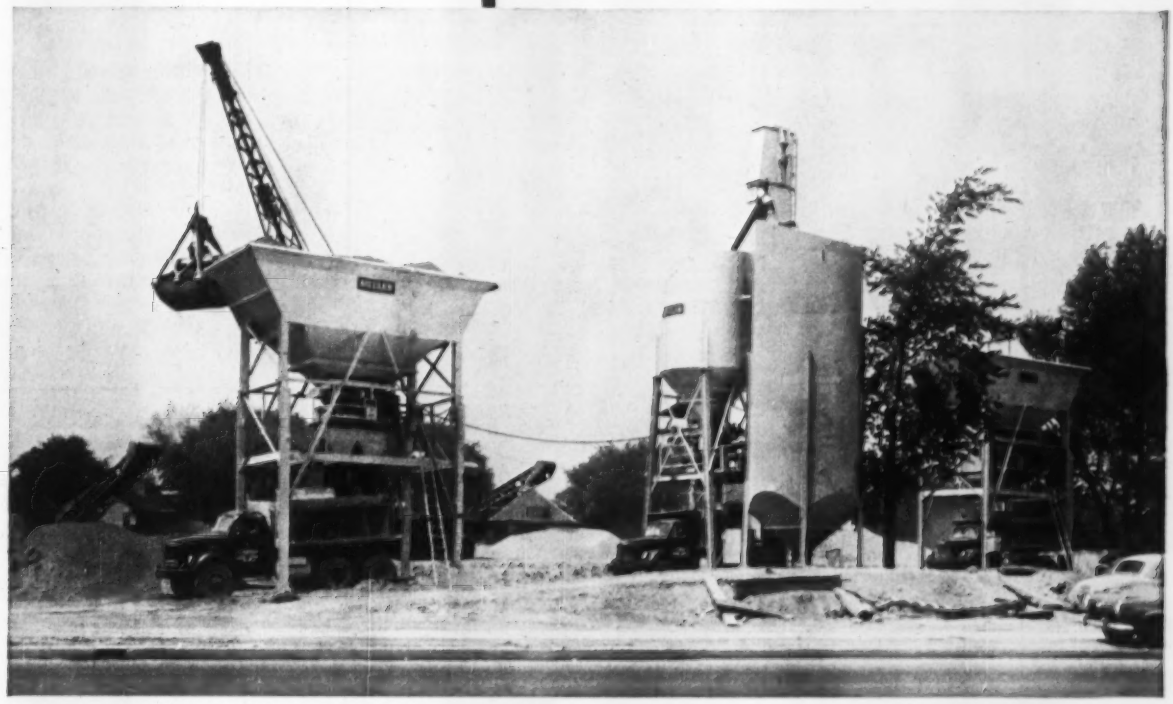

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It all sums up to this: one man operation and high portability slash costs so drastically that the contractor with a BUTLER 0-1-0 *can bid any job successfully and make a better profit* against competition owning yesterday's equipment.

If preferred, instead of batching all materials from the central station, the truck drivers can batch sand and stone from cab by push button control mounted on bin columns.

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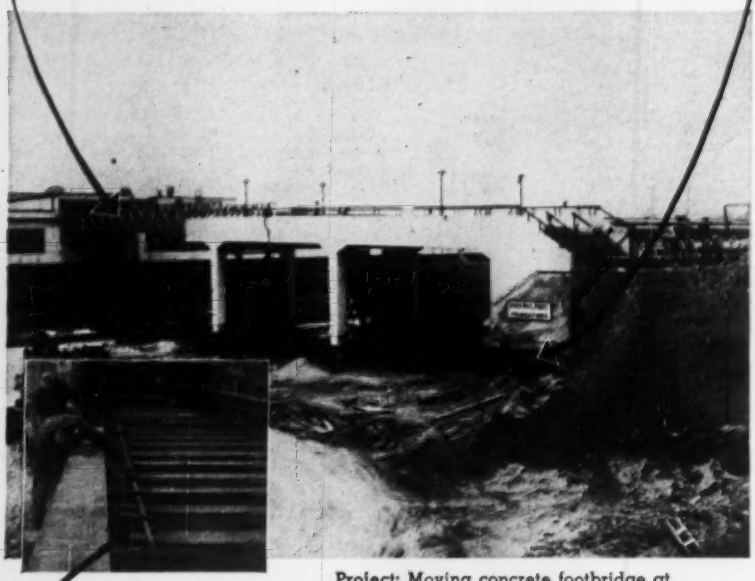

Rollers set between track and runner beams

Project: Moving concrete footbridge at Ford Motor plant, Metuchen, N. J.

General Contractor: Hackart Construction Co., New York City

Architect: Albert Kahn Associates, Detroit

450-TON FOOTBRIDGE MOVED 60 FT. ENDWISE IN LESS THAN 2 HOURS

This moving job—which was necessary to make space for plant expansion—presents several interesting features. One is the rolling Bailey bridge on the overpass, maintaining access to parking lot during the move, and until building of overpass addition.

Another feature was the use of roller-guide channel strips. When pushed against I-beams, these channels aligned rollers perpendicular to the direction of travel, to assure a straight move.

Actual moving of the 450-ton concrete walkway was done —in less than 2 hours—with long-stroke jacks of our own design and manufacture, the jacks by now being veterans of several moving jobs.

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to carry on a trade or adventure for their common benefit, each contributing property or services, and having a community of interest in the profits.' Meehan v. Valentine, 145 U.S. 611, 12 S. Ct. 972,973, 36 L. Ed. 835. The doctrine announced in this case was quoted with approval in Culley v. Edwards, 44 Ark. 423, 51 Am. Rep. 614. That case was followed in Roach v. Rector, 93 Ark. 521, 123 S.W. 399,401, in which it was stated in effect that the parties to the contract must be coprincipals in the business, and if it is owned by one and the other receives the profits or a portion thereof, for services or otherwise, the relationship of partners does not exist. Quoting further from that case, it is said: 'as between the parties themselves, before it can be said that the relationship of partners has been created, it is essential that the parties themselves intended by the effect of their contract to form such a partnership business, and that they should have a common ownership and community of interest in the properties of the business, and that they should share in some fixed proportion in the profits thereof only as profits of the business.'"

(1) United States v. Westmoreland Manganese Corp., 134 F. Supp. 898.
(2) State v. Gus Blass Co., 193 Ark. 1159, 105 S.W. 2d 853.

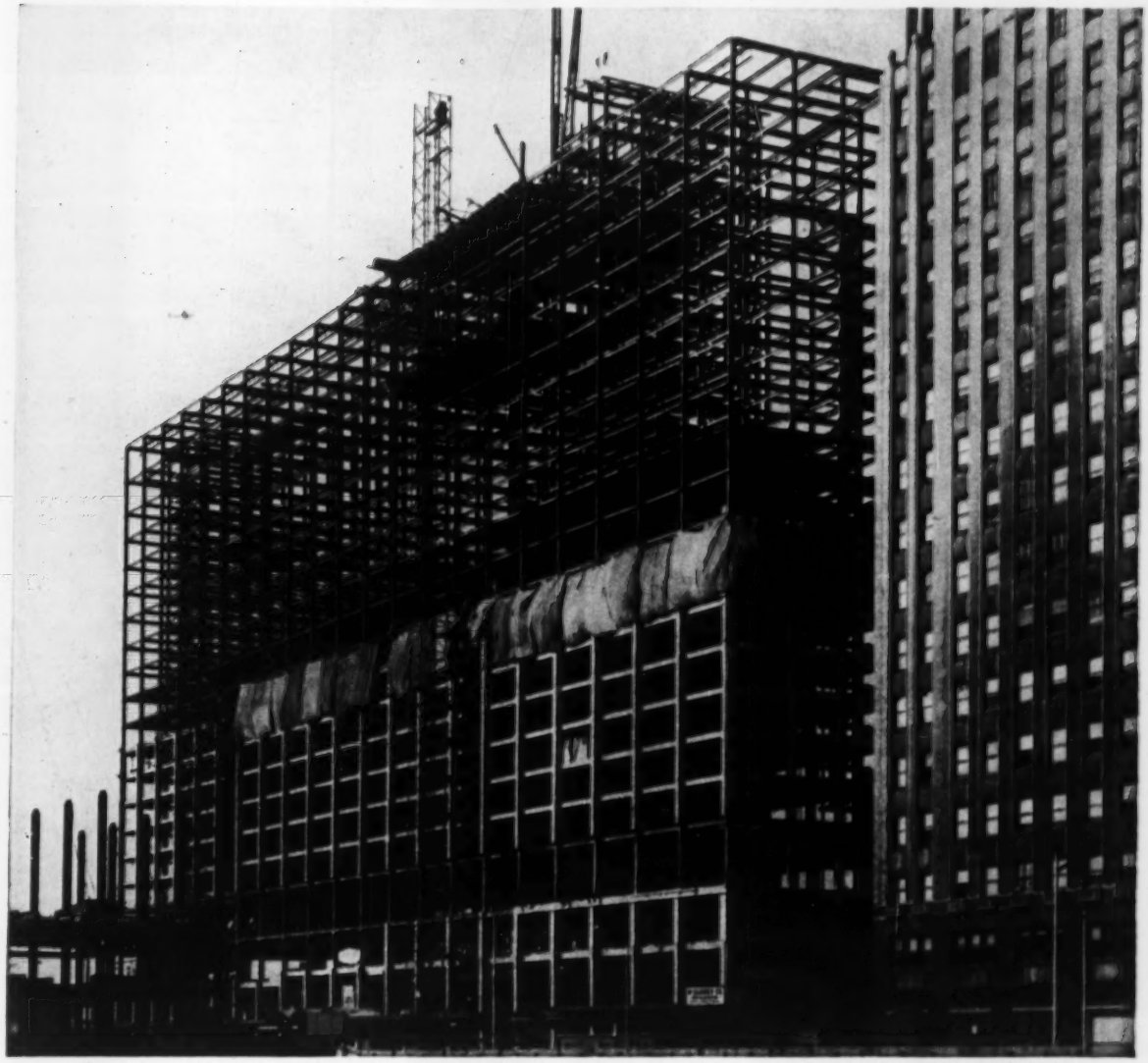
Arbitration of Disputes

If a construction contract contains a general arbitration clause, disputes must be submitted to arbitration instead of being taken to court.

Illustrating the principle is a New York case involving installation of an air conditioning system.

Specifications for the installation—which were made part of the contract—contained the following provision: "Arbitration. All claims, demands, disputes, differences, controversies and misunderstandings, arising under, or out of or in connection with or in relation to these contracts, or any breach thereof, shall be submitted, and shall be determined by arbitration in accordance with the Civil Practice act of the State of New York and the rules of the American Arbitration Association".

The person for whom the work was done brought an action against the seller and the engineer who prepared the specifications to recover damages for an alleged breach of warranty in connection with the sale and installation of the air conditioning unit. After the seller interposed an answer to the action, it made a petition to the court to stay the



Architect: Perry, Shaw, Hepburn & Dean, Boston. *Structural Engineer:* Maurice A. Reidy, Boston. *Builder:* McCloskey & Co., Philadelphia.

Steel rises for new 22-story hotel in Philadelphia's Penn Center

When this photograph was taken, late last year, Bethlehem erection crews had just topped out steelwork for Philadelphia's new Sheraton Hotel. A newsmaker in two respects, it is the first hotel to be built in Philadelphia in over a quarter-century, as well as the city's first structure to be erected with high-strength bolts.

Centrally located in the mid-city Penn Center development, the 22-story Sheraton will provide 1,000 guest rooms. One floor, the twenty-first, will be entirely given over to balconied luxury suites. Public rooms will occupy the three lower floors. Parking for guests' automobiles will be handled in an 800-car garage just across Pennsylvania Boulevard, and easily reached by an underground concourse. Also on the concourse level is a bus terminal and retail shops. Owner of the hotel is the Sheraton Corporation of America.

Bethlehem fabricated and erected 3,900 tons of steel for the hotel's framework. Erection was speeded by the use of about 87,000 high-strength structural bolts, authorized by a recent amendment to the local building code.

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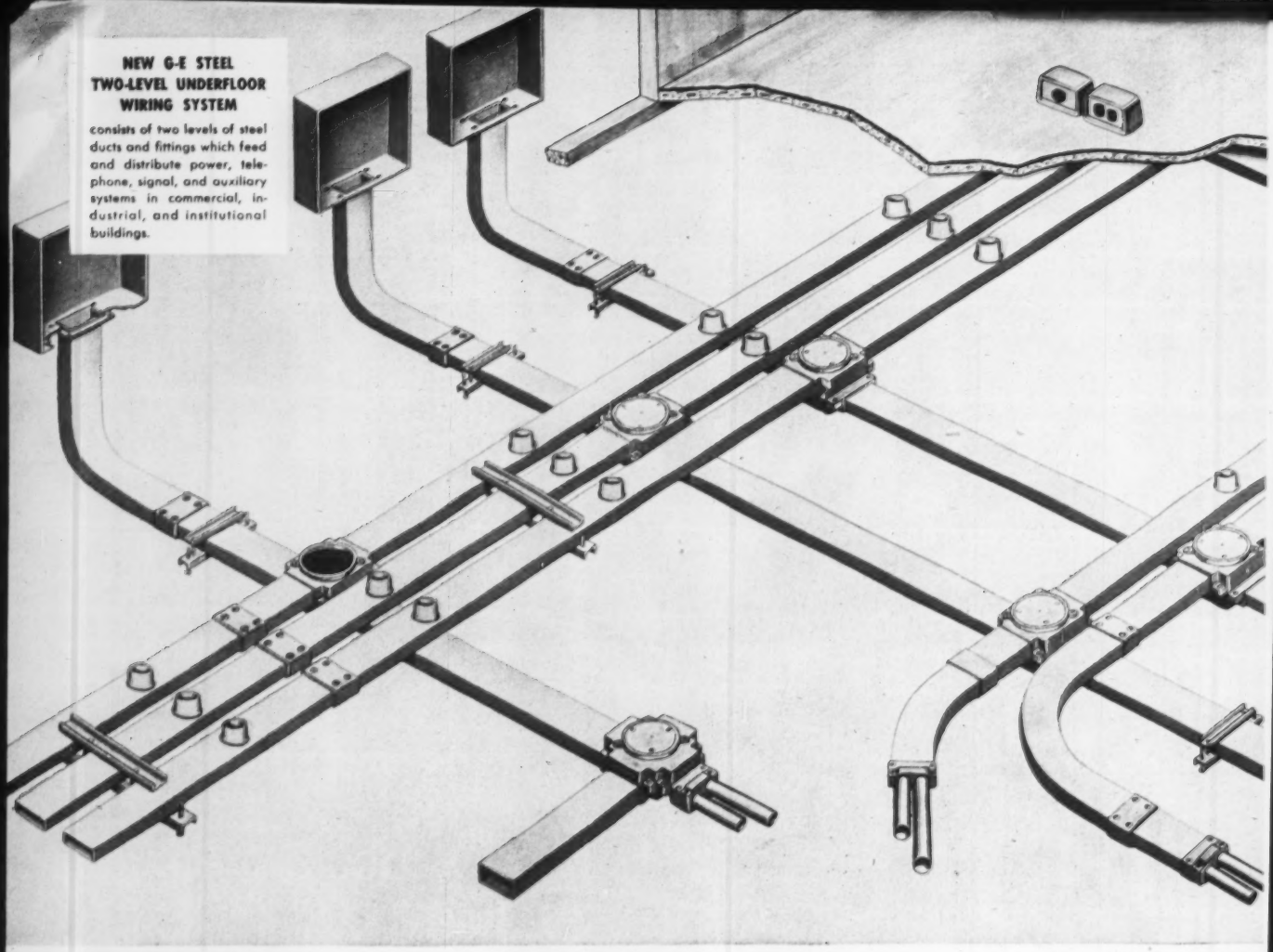
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INCREASED WIRING CAPACITY is provided for by the new steel duct (4-square inches cross-sectional area).

FIND OUT how this two-level system can help you distribute power, telephone, signal, and auxiliary systems. Get in touch with your nearest G-E Construction Materials District Office or write for information bulletin to Section C66-432, Construction Materials Division, General Electric Company, Bridgeport 2, Conn.

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action, claiming that under the terms of the contract, the matter should be settled by arbitration.

The court sustained the seller's application,[1] holding that under the contract, all issues arising out of the contract were triable by arbitration.

(1) Cold Wave Cooling Corp. v. Famous Jerome, Inc., 141 N.Y.S. 2d 898, New York Supreme Court, Bronx County, May 6, 1955, citing with approval, Hatzel & Buehler, Inc. v. George A. Fuller Co., 303 N.Y. 835, 104 N.E. 2d 376, N.Y. Court of Appeals.

Priority of Surety's Claim Under Government Contracts

Under our lien laws, unpaid laborers and materialmen have a superior claim to money due a contractor under a private building contract. In the case of federal construction contracts, laborers and materialmen are protected by payment bonds, since liens can't be placed against government property. If a surety has to make payment under a bond, then he acquires a superior right to money due the contractor—and the right is superior to that of a bank which has loaned money to the defaulting contractor under an assignment of the contract.

A federal court[1] recently summarized the law this way:

"Customarily, in a construction contract between private parties, laborers and materialmen have a lien on the building to secure payment of their claims; hence, if a contractor fails to pay laborers and materialmen, the owner of a private building has the right to use any money owing to the contractor to discharge his obligation to the laborers and materialmen. His right to do this is superior to the rights of an assignee. But a building erected for the United States is not subject to a lien, and the United States is under no legal obligation to pay laborers and materialmen; but it is under an equitable obligation to do so. To discharge this equitable obligation, Congress passed the Miller Act, 49 Stat. 793, 40 U.S.C.A., section 270a et seq., carrying forward prior acts and enlarging them, which requires the execution of a payment bond payable to the United States as a condition precedent to the letting of a Government contract. Under such bond the surety guarantees the payment of laborers and materialmen, and upon performance of this obligation, it relieves the United States from its equitable obligation to see that the laborers and materialmen are paid. For this reason it is subrogated to the right of the United States to apply this money to the payment of laborers and materialmen, in the discharge

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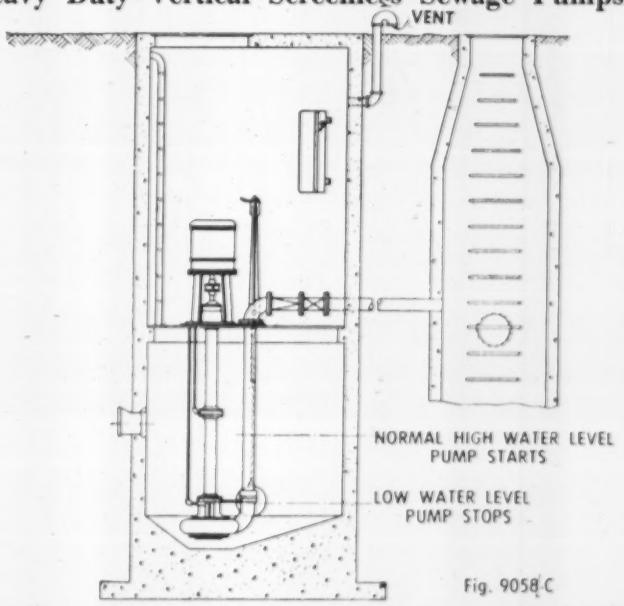

Fig. 9058 C

Automatic underground lift stations are required when sewage or waste from a group of industrial buildings or residences cannot drain by gravity into the main trunk sewer or treatment plant. An economical installation is this submerged style ejector operating in a wet pit. The motor and electrical controls are mounted above the pump cover. Either single or duplex pumps may be used. Provision for increased loads can be made by installing a single pump in a pit of sufficient capacity to allow addition of a second pump at a later period. Pumps can be supplied with totally enclosed or explosion proof motors and moisture proof or explosion proof control where conditions require.

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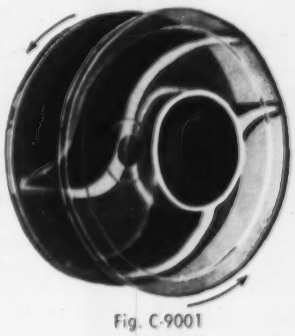

Fig. C-9001

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of its equitable obligation, although the United States was under no legal liability to do so. Since the right of the United States to so use the money is superior to the bank's rights as the contractor's assignee, the right of the surety who pays them is superior to the bank's right."

(1) National Surety Corporation v. United States, 133 F. Supp. 381, United States Court of Claims, July 12, 1955 and numerous cases were cited.

Can't Boost Contract Price By an Oral Agreement Alone

An Oklahoma contractor, who agreed under a written contract to lay pipe at a stipulated price, unsuccessfully tried to recover for the increased cost of the work resulting from inclement weather. He was blocked by two things—the difficulty of altering a written contract and the absence of consideration.

The contractor sought recovery on two alternate theories: (1) The original written aggrement was supplanted by an oral contract whereby the contractor gave up his right to await the carrying out of the written agreement until working conditions returned to normal and the party for whom the work was being done in turn agreed to pay the contractor the actual cost of doing the work under the conditions then existing; or (2) The work performed by the contractor under the existing weather conditions constituted "extra work" above and beyond the work called for by the written contract.

The contractor's action was dismissed on the ground that under an Oklahoma statute a contract in writing can only be altered by a contract in writing or by an oral contract only when the oral agreement has been executed by both of the parties. In this case the alleged oral agreement was executed by only one of the parties, that is, the contractor.

The court also pointed out that even if the alleged oral agreement was not barred by statute it was unenforceable due to a lack of consideration. "It is fundamental that the discharge of a promise previously made and for which the promisor is legally obligated cannot stand as new and separate consideration for a subsequent agreement."

(1) Smith v. Phillips Pipe Line Co., 128 F. Supp. 61, U. S. District Court of Oklahoma, Jan. 8, 1955.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

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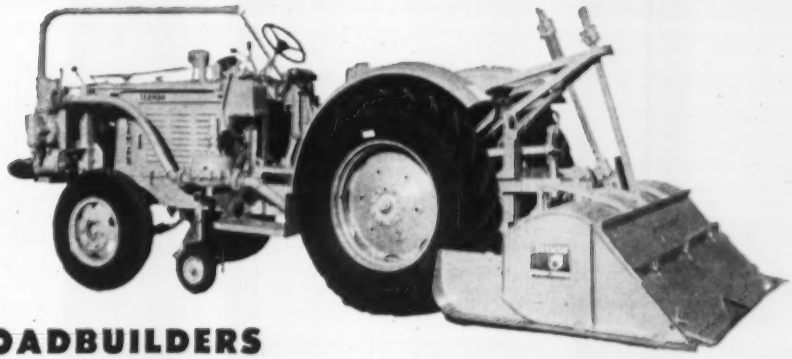
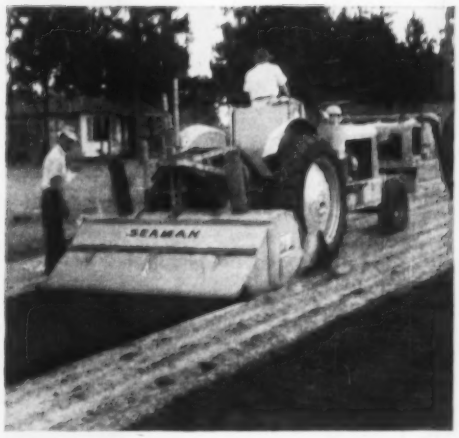


HOW ROADBUILDERS BEAT THE CLOCK . . .

22-Foot Bituminous Road Base Completed at Mile-A-Day Rate with New Seaman-Andwall TRAV-L-PLANT

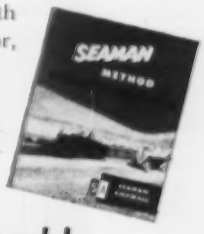


Above — Seaman Self-Propelled TRAV-L-PLANT *in bituminous parkway construction, Jacksonville, Fla. Binder is pumped from transport ahead of the Seaman.*

Contractors today are building better, more durable bituminous roads at lower cost, with greater strength, higher densities —at a mile-a-day production rate. Principle reason for this speed-up is new versatility built into the Seaman TRAV-L-PLANT.

The new TRAV-L-PLANT is a double-duty and often triple-duty machine that performs "in-place" mixing and binder application, together with light scarification, in one time-saving simultaneous operation — on new roads and reconstruction. Self-propelled, the TRAV-L-PLANT pumps binder into the mix from a transport truck operating at the side or ahead. Full tachometer assemblies and volumetric meter provide precision application through a spray bar positioned in the mixing chamber. There is no time delay between base stabilization and binder application and mixing; bitumen has no time to cool, and run-off or migration is prevented.

The TRAV-L-PLANT leaves the surface partially compacted, ready for final rolling with the Seaman-Andwall Pneumatic Compactor, to final density.



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Mass., Quincy—TEMPLE—Temple Beth-El Bldg. Comn., 60 State St., Boston, soon lets contract temple, Hancock and Bridge Sts. $345,000. Percival Goodman, 40 E. 49 St., New York, N. Y., archt. CD 3/8.

HEAVY CONSTRUCTION—LB & CA

▲ CONNECTICUT—State Hy. Comn., State Office Bldg., Hartford,
Conn.—Harris Structural Steel Co., 419 Fourth Ave., New York, N. Y., CA $2,713,350. Proj. 312-02, superstructure Yellow Mill Pond Bridge, Bridgeport;
Conn.—Bethlehem Steel Co., 25 Broadway, New York, N. Y., CA $7,887,754. Proj. 317-05, main portion of bridge over Quinnipiac River, New Haven Co. Bids Feb. 20, awarded Mar. 20. CD 2/23, under LB.

▲ CONNECTICUT—State Hy. Comn., State Office Bldg., Hartford.
Mariani Constr. Co., 222 Forbes Ave., New Haven, Conn., CA $4,889,703. Proj. 316A-01, multiple span composite girder and beam bridge over West River and Kimberly Ave., paving with b. conc. on Kimberly Ave. and Boulevard, West Haven and New Haven. Bids Mar. 5, awarded Mar. 21. CD 3/7, under LB.

▲ CONNECTICUT—State Hy. Comn., State Office Bldg., Hartford.
C. W. Blakeslee & Son, Inc., 58 Waverly St., New Haven, Conn., CA $4,271,357. Proj. 317-04, c. conc. Water St. and West side of Belle Dock and east side of Quinnipiac River to Stiles St., etc. New Haven, New Haven Co. Bids Mar. 5, awarded Mar. 21. CD 3/7, under LB.

▲ CONNECTICUT—State Hy. Comn., State Hy. Office Bldg., Hartford.
L. G. DeFelice & Son, Inc., Nettleton Ave., North Haven, Conn., CA $9,123,457, Proj. 312-01, c. conc. 13,806 lin. ft., incl. grade separations, structures at Pembroke St., Seaview, Newfield, Central Union and Hollister Aves., in Bridgeport, and Surf Ave., Stagg and Mead Sts., Honeysport Rd. and South Ave., in Stratford, incl. substructure of Yellow Mill Pond Bridge, Stratford Ave. Overpass and Beardsley St. Overpass, Bridgeport and Stratford. Awarded Mar. 21. CD 3/7, under LB.

BUILDINGS—LB & CA

▲ Stone & Webster Engineering Corp., 49 Federal St., Boston, Mass. CA Est. $6,000,000. design and construct 31,250 kw POWER PLANT, consisting of two 15,625 kw turbine generators, one noncondensing and other condensing, MILLINOCKET, ME. Great Northern Paper Co., 6 State St., Bangor, Me.
Jenney Bros. Constr. Co., 1 Thoreau Court, Concord, Mass. CA Approx. $400,000. 30,000 sq. ft. BUILDING, CAMBRIDGE, MASS. Memorial Drive Trust, c/o Arthur D. Little, Inc., 30 Memorial Dr., Cambridge, Mass. John Quincy Adams, Lincoln, Mass., archt.
Walsh Brothers, 150 Hampshire St., Cambridge, Mass. CA Approx. $370,000. 12,523 sq. ft. HOME for AGED, 434 Jamaicaway, JAMAICA PLAIN, MASS. Home for the Aged Men, 133 W. Springfield St., Boston, Mass. Bids Jan. 24. CD 1/10.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

N. Y., East Greenbush—BA 4/9—Town, Town Bd., 0.75 M. G. D. primary sewage treatment plant, consisting of influent distr. manhole, combined comminutor and Venturi Flume, primary clarifier, square grit separator, sludge drying beds, chlorine contract tank, all inter-connecting piping and control piping, digester gas and heating sys., entrance roadway, site grading. Plans deposit $20. Benjamine L. Smith & Assoc., 11 N. Pearl St., Albany, engrs.
† N. Y., Brooklyn—RUNWAYS—BA 4/10—Dist. P. Wks. Office, Third Naval Dist., Federal Office Bldg., 90 Church St., New York, Zone 7, sealcoating Runways 1-19, 6-24 and taxiways Nos. 4, 5, 6 and 7, U. S. Naval Air Station, Floyd Bennett Field, NBy 346, Spec. 346/56. Plans deposit $25.
† D. C., Wash.—PIER—BA 4/11—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, rehabilitation of Pier 1 and boat landing, N. G. F. Bellevue Annex and repairs to Slip 5, Naval Gun Factory, NOY-88793. Plans deposit $25.
N. Y., New York—ESCALATOR ENCLOSURES, etc.—BA 4/13—New York City Transit Authority, 370 Jay St., Brooklyn, Zone 1, constr. escalator enclosures and stairways at Intervale Ave. and 177 St. Stations of White Plains Line, Bronx. Contr. WW.
† Md., Carderock—COMPUTOR BLDG.—BA 4/18—Dist. P. Wks. office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., 2 story, 50x130 ft., steel, rein.-con., Computor Bldg. "B" at David W. Taylor Model Basin, NOY 91994. Plans deposit $20. CD 12/28, under LB.
† Md., Patuxent River—STEAM HEATING PLANTS—BA 4/18—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., consolidation of steam heating plants, Naval Air Station, NOY 92007.

BUILDINGS—BA

D. C., Wash.—LIBRARY—BA 4/10—D. C. Govt. Director Bldgs. & Grounds, 499 Pa. Ave. N. W., Woodridge Branch Library, Rhode Island Ave. and 18 St. N. E. Plans deposit $5.
† D. C., Wash.—BUILDING ALTERATIONS—BA 4/11—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, NOY 93287. Plans deposit $25.

BUILDINGS—SLC

N. J., Princeton—NURSING HOME—Princeton Hospital, Witherspoon St., soon lets contract nursing home addn., alterations. $400,000. York & Sawyer, 101 Park Ave., New York, N. Y. archts. Wilcox & Erickson, 11 E. 44 St., New York, N. Y., engrs. CD 3/8.

HEAVY CONSTRUCTION—LB & CA

▲† Five Boro Constr. Corp., 2 Lafayette St., New York 7, N. Y. LB $1,161,400. Schedule III, Special AAA Facilities, Spring Valley, NEW YORK. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids Mar. 22. CD 3/1.

BUILDINGS—LB & CA

Quentin Building Corp., 44 Court St., Brooklyn 2, N. Y. Owner Builds. $636,000. 6 story APARTMENT, 1717 E. 18 St., BROOKLYN, N. Y. CD 1/24.
Belt Parkway Constr. Corp., c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn 2, N. Y. Owner Builds. $432,000. 6 story APARTMENT, 2619-49 E. 13 St., BROOKLYN, N. Y. CD 2/29.
▲ Grayco Builders, 106-21 Continental Ave., Forest Hills, 75, N. Y. LB $1,183,000. (6 bidders) DORMITORY, DINING ROOM on Campus, ST. GEORGE, N. Y. Wagner College, 631 Howard Ave., St. George, N. Y. Bids Mar. 19. Architect is under instructions to negotiate with four lowest bidders in attempt to get price down to budget figure, approx. $900,000. CD 2/10.
▲ Koppers Co., Inc., Chemical Div., Koppers Bldg. Pittsburgh, 19, Pa., Own Forces, $10,000,000. design and construct 10 building plastics PLANT, incl. chemical plant, laboratory, maintenance and utilities, warehouses and office, WOODBRIDGE, N. J.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**
PROPOSED WORK	
Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

▲ Ceasar DeChiccis & Co., Box 329, Clairton, Pa. LB $1,483,387. general constr. 3 story, brick, block SENIOR HIGH SCHOOL, Penn Twp., WILKINSBURG, PA. Penn Twp. School Dist. Auth., 102 Duff Rd., Penn Hills P.O., Pittsburgh, Pa. Jos. W. Hoover, 333 Blvd. of Allies, Pittsburgh, Pa., archt., CD 9/29/53;
Pittsburgh Des Moines Steel Co., Neville Island, Pittsburgh, Pa. LB $507,482. structural steel and bar joists (Wilkinsburg, Pa.);
E. C. Ernst, Inc., 7025 Campania Ave., Pittsburgh, Pa. LB $374,131. electrical work (Wilkinsburg, Pa.);
Harry Daugherty & Son, 106 Fifth St., Freeport, Pa. LB $354,943. heating and ventilating work (Wilkensburg, Pa.).

SOUTH

HEAVY CONSTRUCTION—BA

† Ala., Camp Rucker—PARKING APRONS—BA 4/11—U. S. Eng., 2301 Grant St., Mobile, Zone 7, two aircraft parking aprons, Army Aviation Center, near Ozark.
Fla., Tampa—BA 4/12—Bd. Representatives, City Hall, Tampa, Div. XCS, 6,190 lin. ft. 18 in. vitr. clay sewers, Drew Field Trunk Sewer; Div. XC11, 4,210 lin. ft. 15 and 18 in. vitr. clay sewers, West Shore Trunk Sewer; Div. SC12, 3,870 lin. ft. 12 and 15 in. vitr. clay sewers, Wellswood Trunk Sewer; Div. SF-8, 12,760 lin. ft. 10 and 14 in c.i. force mains. Plans deposit $25 each. Greeley & Hansenk, 220 S. State St., Chicago 4, Ill., consult. engrs; adv. ENR 3/29.
† Ga., Brunswick—QUARTERS, etc.—BA 4/19—Dist. P. Wks. Office, Bldg. No. 12, U. S. Naval Base, Charleston, S. C., Junior Officers' Quarters, married enlisted men's quarters, U. S. Naval Air Station, NBy-829, Spec. 829/56. Plans deposit $30.
† La., New Orleans—SEWAGE TREATMENT PLANT—BA 4/19—Officer in Charge of Constr., Eighth Naval Dist., Bldg. 16, U. S. Naval Station, sewage treatment plant, incinerator, Joint Air Reserve Training Center, Alvin Callender Field (Belle Chasse), NBy-1097, Spec. 1097/56. Plans deposit $20.
† La., New Orleans—SUBSISTENCE BLDG.—BA 4/20—Officer in Charge Constr., Eighth Naval Dist., Bldg. 16, U. S. Naval Station, (Algiers), enlistend men's subsistence bldg., Joint Air Reserve Training Center, Alvin Callender Field, (Belle Chasse), NOy-91256, Spec. 49819. Plans deposit $30.
† W. Va., Martinsburg—RUNWAY—BA On Or About 4/24— U. S. Eng., 237 Fourth Ave., Huntington, runway exten., taxiway and apron for Air National Guard, Martinsburg Municipal Airport, Serial No. ENG-46-022-56-20. CD 8/18.

BUILDINGS—BA

▲ Ky., Louisville—BUILDING—BA 4/13—General Electric Co., Appliance Park, Louisville, superstructure for room air-conditioning bldg., Appliance Park, Benchel. Total est. $5,000,000. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., engr.-archt. F. A. Fairbrother & George Miehls, 345 New Center Bldg., Detroit, Mich., engrs. CD 11/11.

HEAVY CONSTRUCTION—LB & CA

County Paving & Constr. Corp., Fairfax Circle, Fairfax, Va., LB $271,623 (6 bidders) Contr. 62, approx. 23,600 lin. ft. 8- to 21-in. sanitary sewers, appurtenances, FAIRFAX, VA. Bd. Supervs., Fairfax Co., Court House, Fairfax, Va. Bids Mar. 20 CD 3/6.

BUILDINGS—LB & CA

▲ J. Kennon Perrin Co., S and Cary Sts., Richmond, Va. CA $1,308,336. TREATMENT BLDGS. Nos. 25 and 28, or Eastern State Hospital, WILLIAMSBURG, VA. Commonwealth of Va., State Hospital Bd., 309 N. 12 St., Richmond, Va., Baskervill & Son, 2313 W. Cary St., Richmond, Va. archts., Hankins & Anderson, 18 N. 5 St., Richmond, Va., engrs. CD 4/26/55.
Bauer-Warne Co., 9566 Harding Ave., Surfside, Fla., Owner Builds, $500,000, 24-unit APARTMENT, Bal Harbor Blvd. and Harbour Way, BAL HARBOUR VILLAGE, FLA. CD 2/28, under LB.
Gottfried Co., 1871 N. W. 183 St., Opa Locka, Fla., Owner Builds, $350,000. 270 RESIDENCES, Southcrest Gardens, N. W. 183 and 191 Sts. N. W., 17 Ave. and 19 Ave., OPA LOCKA, FLA.
Richards S. Fink, 125 N. Shore Dr., Miami Beach, Fla., CA $750,000, 120-room MOTEL, "Golden Nugget", 18555 Collins Ave. (Sunny Isles) North Biscayne Blvd., MIAMI BEACH, FLA. The Tara Corp., c/o Tony Sherman, archt., 625 N. E. 78 St., Miami, Fla. CD 3/14, under LB.
Chaves Constr. Co. of Miami, 310 95 St., Surfside, Fla., CA $900,000, 252-unit MOTEL, Colonial Inn, 18101 Rte A1A, NORTH BISCAYNE BEACH, FLA. Malmorton Corp., Box 6157, Miami Beach, Fla. CD 3/16, under LB.
Forcum Lannom Co., Dyersburg, Tenn., LB $382,279. 1 story, 55,000 sq. ft. PLANT to mfr. shock absorbers and automotive parts, DYERSBURG, TENN. City, Dyersburg, Tenn. Heckethorn Mfg. & Supply Co., lessee. CD 6/24/53.

(Continued on page 118)

Firestone NYLON TIRES

CUT DOWNTIME LOSSES AND REDUCE TIRE COSTS ON LARGE OR SMALL HIGHWAY CONSTRUCTION JOBS

TODAY's fast highway construction timetables call for rugged, efficient earth moving equipment that is capable of top performance in all types of soil conditions.

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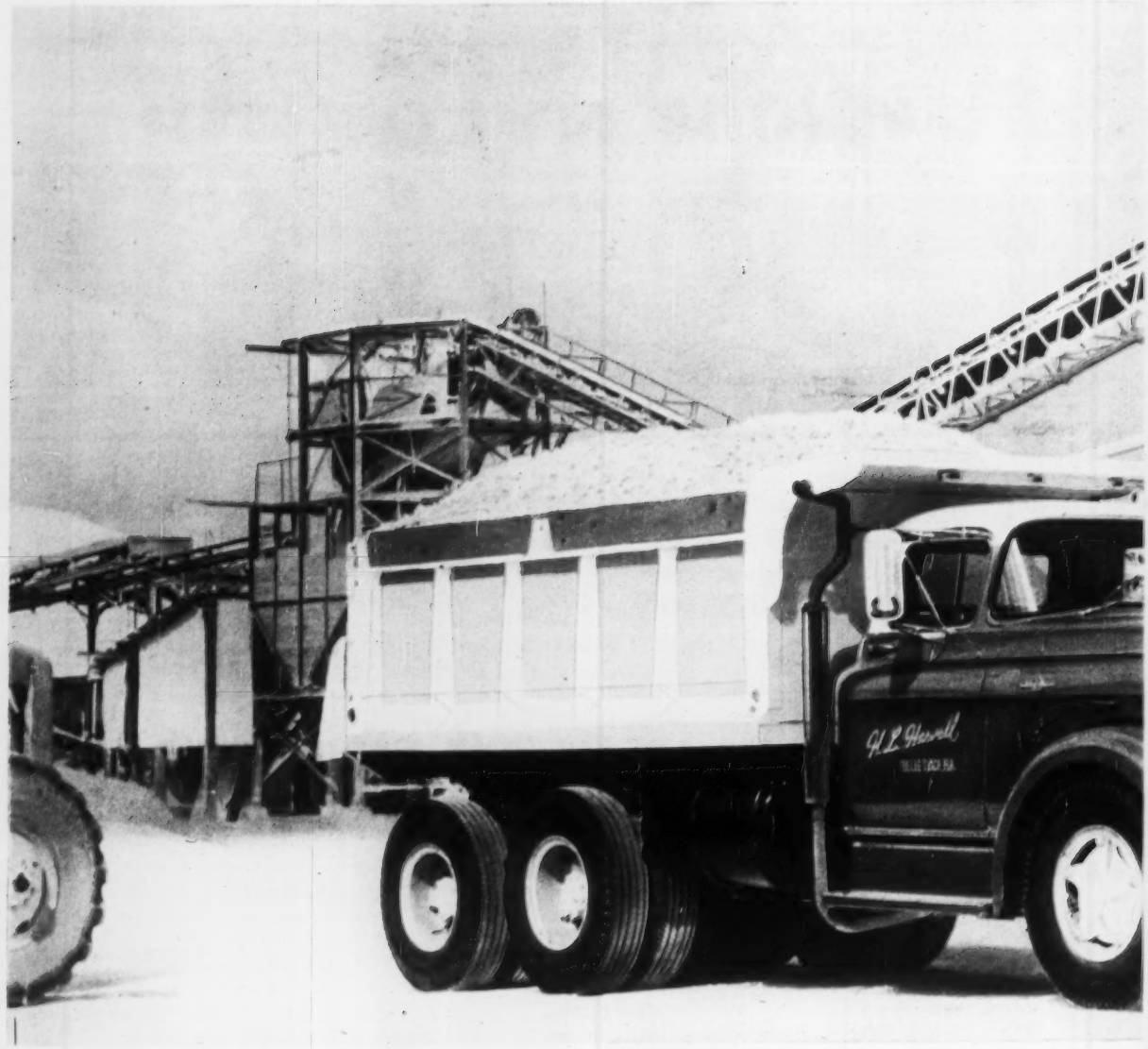

"They've passed 150,000 rough, tough miles—

Hauling Contractor H. L. Harvell reports on his GMC *Diesel dumps—hauling a million tons of crushed rock on Florida Flood Control project*

THE bidding was sharp when Hanford Harvell figured on the huge Central and South Florida Flood Control job two years ago. For he was not only competing against other truckers—but traditionally low-priced haulers of bulk materials.

"I couldn't have submitted the figures I did—if I hadn't had plenty of confidence in my GMC's," Harvell says. "But I'd had plenty of experience with their low costs—and sure-fire dependability—on many a tough job. And the new GMC Diesels are doing even better than I expected.

"Take just their maintenance savings. Some of my trucks have put in better than 150,000 miles—and nary an overhaul yet. My newest GMC has clocked 29,000 miles in the past 90 days. And I've had no down-time at all.

"Fuel savings are just as good. In fact, I'm getting 7 miles to the gallon. And that's on heavy hauls

Hustling 17 tons of crushed stone at a clip, this brawny Diesel tandem supplies foundation material for pumping stations along the canal. This model—rated at 46,000 GVW—is from GMC's new Blue Chip heavy-duty line blanketing the hauling range all the way up to 59,000 GVW-90,000 GCW. *Extra-stamina engineered* from rims to roof, these GMC's now offer full-length channel frame reinforcements as a factory-installed option—when required for exceptionally severe service.

"I never hesitate to recommend GMC's to other haulers," declares Hauling Contractor Hanford Harvell. "In fact, the way my rigs stand up to any job has probably influenced the buying of about 175 other GMC's in this area alone. It's a GMC for me—every time!"

Power to move big loads—fast—comes from the GMC's new 4-71 Diesel engine. It's one of the great new Blue Chip line of power plants—offering a choice of six cylinder or V8 gasoline engines—four or six cylinder Diesels. All of them give you power aplenty to move top-capacity loads on fast-moving, tightly scheduled jobs—even through tough off-the-road conditions to the job-site. And that's where the driver also appreciates Safety Power Steering—standard on some models; optional at extra cost on others.

and still no overhauls!"

that average 300 to 500 miles every day."

Harvell's experience unusual? Not among hauling contractors using GMC's brawny new construction haulers. They've found that new Blue Chip GMC tandems—gasoline or Diesel—handle bigger jobs at lower cost than anything else around. *Yet their price tags are below those on competitive equipment.*

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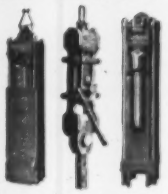

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32 Mercer Street, Dover, N. J.

(Continued from page 114)

MIDDLE WEST

HEAVY CONSTRUCTION—LB & CA

† George Sheaf & Co., Inc., 449 Neilston Ave., Columbus, O., LB $199,899 (8 bidders) storm drainage facilities, Lockbourne Air Force Base, ENG-46-022-56-16, COLUMBUS, O. U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va. Bids Mar. 14. CD 2/20.

Kalill Co., 4161 W. 150 St., Cleveland, O., LB $516,935 (5 bidders), Contr. A; LB $106,934 (2 bidders), Contr. D, for completion sewage plant, PAINESVILLE, O. City, City Hall, Painesville, O. Bids Mar. 15. CD 3/5.

BUILDINGS—LB & CA

Merimeade Constr. Co., A. E. Meade, gen mgr., 15321 Triskett Rd., Cleveland 11, O. Own Forces. $344,000. four APARTMENTS, Triskett and Lorain Rds., CLEVELAND, O. Henry C. Grieme, 33 River St., Chagrin Falls, O., archt. Awarded Feb. 29.

Knowlton Co., 1459 King St., Columbus, O., CA general constr. steel, red brick Bishop Hartley HIGH SCHOOL and teachers' RESIDENCE, Zettler Rd. at E. Livingston Ave., COLUMBUS, O. Total est. $921,000. Catholic Diocese of Columbus, Bishop Miachel J. Ready, 198 E. Broad St., Columbus, O. CD 1/25; **Wuellner & Theado,** 691 Parsons St., Columbus, O. CA; mechanical (Columbus, O.); **Electrical Power Equipment Co.,** 57 E. Chestnut St., Columbus, O., CA; electric (Columbus, O.).

Luria Engineering Co., Eaton Ave., Bethlehem, Pa., CA Est. $100,000. 15,375 sq. ft. FACTORY addn. at rolling mill division plant, 250 Franklin St., SALEM, O. E. W. Bliss Co., 1375 Raff St. S. W., Canton, O.

Geo. W. Lathrop & Sons Co., Inc., 15010 Montcalm St., Toledo, O. CA $638,617. SCIENCE BLDG. at Michigan State Normal College, YPSILANTI, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich. Bids Mar. 15. CD 2/13.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲ Colorado—VEHICULAR TUNNEL—BA 4/16—State Hy. Dpt., 4201 E. Arkansas St., Denver, vehicular tunnel under continental divide in vicinity of Straight Creek Divide for connection to U.S. 6 and/or in vicinity of Berthoud Pass for connection to U.S. 40, Summit, Clear Creek and Grand Counties. $16,000,000. Detailed plans and specifications have not been prepared and are therefore not available to prospective bidders. The exact location of the tunnel has not been determined. All proposals and bids for construction of a tunnel at either location must be accompanied by detailed stipulations or detailed designs and specifications. The Berthoud Pass Tunnel locations to have maximum elevation of 9,475 ft. at eastern portal and 9,775 ft. western portal. The Straight Creek Tunnel to have maximum elevation of 11,108 ft. at eastern portal and 11,145 ft. at western portal. Mark U. Watraus, hy. engr. CD 3/16/54.

† N. M., Alamogordo—ELECTRICAL DISTRIBUTION SYSTEM—BA About 4/20—U. S. Eng., P. O. Box 1538, Albuquerque, electrical distr. system, and electrical transformer station, Holloman Air Force Base, ENG-29-005-56-83.

† Wyoming—BA 4/25—Bureau Reclamation, Dpt. Interior, Worland, earthwork, structures, Main Canal No. 1 and lateral, Main Canal No. 2, and laterals, Bluff Laterals No. 1 and No. 2, Missouri River Basin Proj., Spec. DC 4662. (Correction-place for bid opening.) CD 3/14.

† Nebraska—SUB-STATION—BA 5/1—Bureau Reclamation, Dpt. Interior, Glendo, Wyo., constr. 115-kv bay addns. at Gering Sub-station, Scotts Bluff Co., Missouri River Basin Proj. Spec. DC 4643.

BUILDINGS—BA

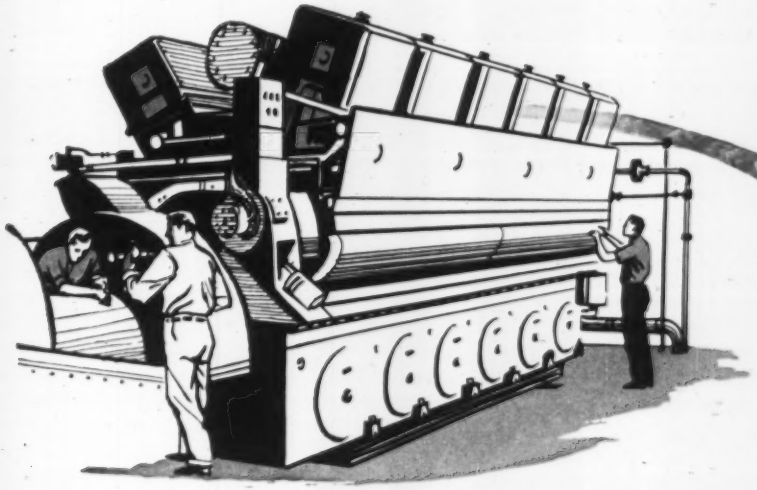
Mont., Billings—DORMITORY—BA 5/10—State Bd. Educ., Capitol Bldg., Helena, 3 story, 19,000 sq. ft., concrete frame dormitory, Eastern Montana College. Plans deposit $50. Cushing & Terrell, 1333 N. 27 St., archts.

HEAVY CONSTRUCTION—LB & CA

TEXAS—State Hy. Comn., Austin.
J. R. Fanning, P. O. Box 1278, Lubbock, Tex., LB $390,954, replace timber bridges 0.472 mi. Hy. ST 256 and 70. Proj. C 311-2-9, etc., Hall Co. Bids Mar. 20. CD 3/9.

▲ TEXAS—State Hy. Comn., Austin.
Tex.—Angelo Constr. Co., P. O. Drawer 1631, San Angelo, Tex., LB $71,203, grading, structures, base, surf. 3.636 mi. Hy. FM 2083, Proj. R 1280-3-1, Crockett Co.;
Tex.—Austin Asphalt Co. & Austin Contr. Co., P. O. Box 1590, Dallas, Tex., LB $240,073, widen shoulders, hot mix b. conc. 10.415 mi. Hy. US 277. Proj. C 156-4&5-20&17, Wichita and Archer Counties;
Tex.—Austin Bridge Co. & Austin Road Co., P. O. Box 1590, Dallas, Tex., LB $1,115,744, flexible base, c. conc. pavement, two course surf. tr. 3.53 mi. Hy. US 75 and SH 121, Proj. F 98 (8), etc., Collin Co.;
Tex.—Aycock-Mitchell, Inc., Marshall, Tex., LB $207,574, flexible base, two course surf. tr. 4.001 mi. Hy. SH 103, Proj. F 1094 (7), San Augustine Co.;
Tex.—Bryan & Hoffman, P. O. Box 390, Plainview, Tex., LB $139,143, grading, structures, base, surf. 11.115 mi. Hy. FM 143, Proj. S 205 (2), King and Knox Counties.

(Continued on page 121)



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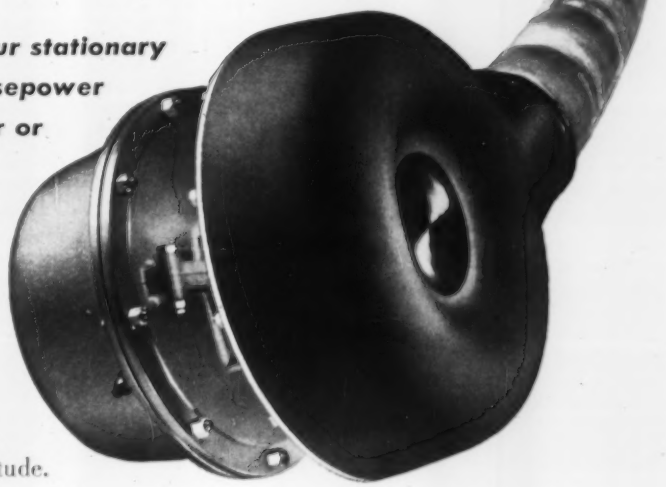

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You benefit from faster setting time. Plain concrete, without Dowflake, poured at 40°F. requires an average of 6¾ days to reach safe working strength. This same concrete *with* Dowflake needs only 2¾ days—a savings of four full days! At 32°F. Dowflake saves you 5¾ days—at 25°F. it's actually 35 days!

Save man-hours, save money, increase efficiency—and get a stronger, better quality concrete faster with Dowflake. Dowflake can be added at the plant or to the mixed concrete in the truck shortly before discharge. Available in 25-pound and 100-pound moistureproof bags. Write THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. IN 781S—1

(TOP) The 25-pound bag is an accurate measuring unit. Add one bag to a five-yard batch to obtain a 1% Dowflake mixture. Two bags for 2%. Mix thoroughly. Easy as that—and no chance for error, no awkward bucket measures!

(CENTER) Concrete flows faster, is more workable and produces a greater strength gain when it contains 1 to 2% Dowflake.

(BOTTOM) Your assurance of better concrete work every time is Dowflake!

you can depend on DOW CHEMICALS DOW

(Continued from page 118)

Tex.—**R. C. Buckner**, P. O. Box 609, Jacksonville, Tex. LB $122,580, grading, structures, base, surf. 7.117 mi. Hy. FM 1115, Proj. R 1262-1&2-1&3, Fayette and Gonzales Counties; LB $161,972, grading, structures, base, surf. 7.364 mi. Hy. FM 487 and 437, Proj. S 963 (4), etc., Milam Co.;

Tex.—**Collins Constr. Co. of Texas**, P. O. Box 1192, Austin, Tex., LB $161,403, wid'n. structures, wid'n. and resurf. with hot mix b. conc. 5.825 mi. Hy. US 84, Proj. C 55-7-16, McLennan Co.;

Tex.—**E. B. Darby & Co., Inc.**, P. O. Box 467, Pharr, Tex., LB $118,445, seal coat 54.418 mi. Hy. US 77, Spur 199, Loop 249, FM 1792, 508, 490, 493, 733, 507, 675, 803, 802, 1575 and 1847, Proj. C 39-5-3, etc. Cameron and Hidalgo Counties; LB $103,156, seal coat and asph. 55.785 mi. Hy. US 83, Loop 254, SH 339, 44 and FM 1017, Proj. C 39-1-3, etc., Starr, Duval and Jim Hogg Counties;

Tex.—**Gulf Bitulithic Co.**, P. O. Box 2572, Houston, Tex., LB $631,517, flexible base, c. conc. and asph. surf. 3.49 mi. Hy. SH 73, Proj. FI 1052 (31), Harris Co.;

Tex.—**E. W. Hable & Sons**, P. O. Drawer 650, Corsicana, Tex., LB $112,986, grading, structures, base, surf. 3.214 mi. Hy. FM 1078, Proj. S 2064 (1), Orange Co.;

Tex.—**Heldenfels Bros.**, P. O. Box 1917, Corpus Christi, Tex., LB $93,641, asph. 6.06 mi. Hy. US 281, Proj. C 255-8-18, Hidalgo Co.; LB $617,333, flexible base, b. conc. 17.817 mi. Hy. US 81, Proj. FI 548 (10), etc., LaSalle Co.;

Tex.—**Geo. Kies & R. B. Bowen**, 1303 Robert E. Lee Rd., Austin, Tex., LB $246,220, seal coat 324.204 mi. Hy. US 84, 62, 380, SH 51, 86, etc., Lamb, Lynn, Terry, Yoakum, Swisher, Garza, Castro, Crosby, Gaines and Bailey Counties;

Tex.—**John T. Leslie & W. L. Parnes, Contr.**, Bailey, Tex. LB $700,959, flexible base, b. conc. pavement and T. & P. Ry. 7.044 mi. US 80, OP on Hy. US 83, Proj. F 90 (9), Taylor Co.;

Tex.—**Ernest Loyd**, P.O. Box 1120, Fort Worth, Tex. LB $96,532, grading, structures, base, surf. 3.88 mi. Hy. FM 677, Proj. S 1057 (4), Montague Co.;

Tex.—**McMillin-Burkett Constr. Co.**, P.O. Box 1161, Texarkana, Tex. LB $152,130, grading, structures, base, surf. 6.78 mi. Hy. FM 1326, Proj. S 1735 (2), Bowie Co.;

Tex.—**Menefee Bros.**, P.O. Box 431, Center, Tex. LB $192,085, flexible base, two course surf. tr. 5.41 mi. Hy. US 287, Proj. S 1893 (1), Tyler Co.;

Tex.—**J. W. Perry**, 501 Insurance Bldg., San Antonio, Tex. LB $137,950, grading, structures, base, surf. 10.564 mi. Hy. FM 215, Proj. S 2104 (1), Hamilton Co.;

Tex.—**Spaw-Glass, Inc.**, 2411 Times Blvd., Houston, Tex. LB $161,905, grading, structures, base, surf. 5.705 mi. Hy. FM 2004, Proj. S 2118 (1), Galveston Co.;

Tex.—**Uvalde Constr. Co.**, P.O. Box 10286, Dallas, Tex. LB $384,794, grading, storm sewers, c. conc. 1.738 mi. Hy. SH 78, Proj. C 9-2-14, Dallas Co.;

Tex.—**Vowell Constr. Co.**, P.O. Box 253, El Paso, Tex. LB $103,911, grading, structures, base, surf. 5.617 mi. Hy. FM 260 and 1905, Proj. S 638 (2), etc., El Paso Co.;

Tex.—**Wes-Tex Constr. Co., Inc.**, 807 N. Cedar St., Borger, Tex. LB $142,408, grading, structures, base, surf. 8.442 mi. Hy. FM 384, Proj. S 2034 (1), Coke and Runnels Counties. Bids Mar. 20. CD 2/24, 3/9, 3/13.

TEXAS—State Hy. Comn., Austin, cancelled bids to have been opened Mar. 20, grading, structures base, surf. 7.738 mi. Hy. FM 576, FM 2312 and SH 351, Proj. S 611 (4), etc. CD 2/24.

TEXAS and OKLAHOMA—State Hy. Comn., Austin, Tex., and State Hy. Comn., Oklahoma City, Okla.:

Imperial Paving Co., 700 E. Grand St., Oklahoma City, Okla. LB $478,411, constr. Red River Bridge and adjacent roadway embankments, US Hy. 77, Proj. IN 588 (2), Cooke Co., Tex. and Love Co., Okla. Bids Mar. 20. CD 3/1.

F & C Engineering Co., 3018 Leeland St., Houston, Tex. CA $238,119, bridge over Old Harbor channel between Freeport and Velasco; CA $77,117, bridge at Lake Jackson over Oyster Creek; CA $81,222, bridge over Oyster Creek on Clute-Statton Ridge; CA $85,000, bridge over Oyster Creek on Old Clute-Angleton Rd., BRAZOSPORT, TEX. Grand total $481,458. Brazoria Co., Brazosport, Tex. Bids Mar. 12. CD 2/17.

† **Harmon Constr. Co.**, 28 S. Indiana St., Oklahoma City, Okla., CA $646,360, est. $600,000, airmens dormitories Perrin Air Force Base, ENG-34-066-56-44, SHERMAN, TEX.; U. S. Eng., Box 61, Tulsa 2, Okla. Awarded Feb. 27. CD 10/7.

† **H. Halvorson, Inc.**, Yardley, Wash., LB $214,898, est. $204,534. (3 bidders) Schedule A, chapel, Malmstrom Air Force Base, ENG-45-164-56-33, GREAT FALLS, MONT.; U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Mar. 15. CD 2/14.

Pappin Constr. Co., 700 Second St. S., Great Falls, Mont. LB $299,997, est. $307,544. (3 bidders) Schedule 3, gymnasium, (Great Falls, Mont.).

† **S. Morgan Smith Co.**, York, Pa., LB $276,500, two butterfly valves for Glendo power plant Missouri River Basin Proj. Spec. DS-4617 WYOMING: Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Mar. 13. CD 3/1.

COLORADO—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Bushman Constr. Co., P. O. Box 713, Grand Island, Neb., CA $713,772, est. $686,000; c. conc. 11.798 mi. Colo. Proj. FI 002-2 (31), Unit 2, Douglas and El Paso Counties. Bids Mar. 14, awarded Mar. 16. CD 3/21, under LB.

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BUILDINGS—LB & CA

▲ Thomas Bate & Sons, 2311 10 St., Denver, Colo., LB $1,360,000. 3 story, STATE DPT. of EMPLOYMENT BLDG., DENVER, COLO. State Dpt. Employment Office Bldg. Auth., State Annex Bldg., Denver, Colo. Bids Mar. 21. Fisher & Fisher, 827 Denver Natl. Bldg., Denver 2, Colo., engrs.

FAR WEST

HEAVY CONSTRUCTION—BA

▲† Washington—BA 4/12—U. S. Eng., City-County Airport, Walla Walla, three 143,000-hp. hydraulic turbines for Ice Harbor Dam, Pasco, Inv. 56-50. Over $5,000,000. Extended date. CD 2/29.

† Wash., Fort Lewis—IGLOOS—BA 4/27—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 23 mounded-earth concrete igloos in ordance ammo storage area, Inv. 56-153. CD 2/3, under Public Buildings.

† Wash., Fort Lewis—BA 4/30—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, c. conc. paving area in Regimental Motor Pool No. 2, Inv. 56-154. CD 7/27/51, under Public Buildings.

BUILDINGS—BA

† Washington—RESIDENCES—BA 4/12—Bureau Reclamation, Dpt. Interior, Ephrata, seven residences, pumphouses, garages and utilities sys. for O & M Housing, Blocks 89, 47 and 14, Columbia Basin Proj., Spec. 1170-368. L. N. McClellan, Bldg. 1A, Denver Federal Center, Denver, Colo., ch. engr.

Calif., Puente—SCHOOL—BA 4/15—Rowland Union School Dist., 2036 S. Fullerton Rd., Rowland School addns. $400,000. L. B. Line, 1741 Silver Lake Blvd., Los Angeles, archt. CD 3/7/55.

HEAVY CONSTRUCTION—LB & CA

† Thayn Constr. Co., 2021 East 27th South, Salt Lake City, Utah, CA $281,800, railroad repairs, Naval Ammunition Depot, NOr 91723, Spec. 50132, HAWTHORNE, NEV. Dist. P. WKs. Office, 12th Naval Dist., San Bruno, Calif. Bids Feb. 21. CD 2/13.

▲ Bethlehem Pacific Coast Steel Corp., 3632 E. Marginal Way, and U. S. Steel Corp., Tower Bldg., both Seattle, Wash., CA, $1,026,000. furnishing 9,000 tons new sheet steel piling and connections for Rocky Reach Dam, WASHINGTON. Chelan County Public Utility Dist., 327 N. Washington Ave., Wenatchee, Wash. Bids Mar. 12.

▲† Campbell Constr. & Equipment Co., 1150 Folsom St., San Francisco, Calif., LB $3,644,408, est. $3,667,304 (5 bidders) 4 guided-missile control and launching areas in vicinity of Fairchild Air Force Base, Inv. 56-134, WASHINGTON, U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Mar. 15. CD 2/15.

▲ Thornburn & Logozo, 4608 36 St. S. W., Seattle, Wash., LB $1,289,619, Alt. A, steel pipe, overhead crossing; LB $1,324,266 Alt. A-1 steel pipe subaqueous crossing; LB $1,085,270 Alt. B, concrete cylinder pipe overhead crossing pipe line from Renton to Factoria, SEATTLE, WASH. City, County-City Bldg., Seattle, Wash. Bids Mar. 7;
Scheumann & Johnson, Lloyd Bldg., Seattle, Wash., LB $1,083,819; Alt. B-1, concrete cylinder subaqueous crossing. (Seattle, Wash.)

▲ CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles,
Griffith Co., 1060 S. Broadway, Los Angeles, Calif., LB $1,885,484, (8 bidders) grading, paving, 6 bridges, pumping plant, Riverside Co. Bids Mar. 22. CD 2/27.

BUILDINGS—LB & CA

▲ School District 207, Wapato, Wash., rejected bids Mar. 13, rein.-con. HIGH SCHOOL, WAPATO, WASH. LB $1,167,603, est. $900,000. CD 2/23.

▲ George A. Fuller Co., 597 Madison Ave., New York 22, N. Y. CA Est. $12,000,000, insulating board PLANT, near KLAMATH FALLS, ORE. Johns-Manville Corp., 22 E. 40 St., New York 17, N. Y. CD 3/20.

Hadley-Cherry Co., 333 N. La Cienega Blvd., Los Angeles, Calif., CA, $777,000. 96 frame, stucco DWELLINGS, Endfield and Calados Aves., AZUSA, CALIF. Coast Three Ten, Coast Two Seventy Six, Coast Two Forty Two, 335 N. La Cienega Blvd., Los Angeles, Calif. Roland Russell, 333 N. La Cienega Blvd., Los Angeles, Calif., archt.

▲ Lindgren & Swanerton, 1631 Beverly Blvd., Los Angeles, Calif., CA, $1,000,000, 160,000 sq. ft. INDUSTRIAL PLANT, FULLERTON, CALIF. Moore Business Forms, Inc., 1001 S. Hope St., Los Angeles, Calif. Bids Jan. 27. CD 2/6, under LB.

▲ William Simpson Constr. Co., 816 W. 5 St., Los Angeles, Calif., CA, $3,000,000, 12 story OFFICE; CA $5,000,000 DEPARTMENT STORE; CA $1,500,000 parking facilities, CA $1,000,000 Hollywood HOTEL, HOLLYWOOD, CALIF. Grand total $10,500,000. C. E. Toberman Co., 6263 Hollywood Blvd., Hollywood, Calif. Austin, Field & Fry, 2311 W. 3 St., Los Angeles, Calif., archts.

Paul W. Speer, Inc., 3425 Cahuenga Blvd., Los Angeles, Calif., CA, $604,000. Sierra SCHOOL, LANCASTER, CALIF. Lancaster School Dist. 44721 N. Date Ave., Lancaster, Calif. Bids Feb. 16. CD 3/1, under LB.

† E. H. Moore & Sons, 693 Mission St., San Francisco, Calif., CB $656,843 (7 bidders) Army Family HOUSING, U. S. Disciplinary Barracks, ENG-04-353-56-89, LOMPOC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 13. CD 3/1.

▲ Robert E. McKee, Inc., 4700 San Fernando Rd., Los Angeles, Calif., CA, $1,282,700, MAXIMUM SECURITY UNIT addns., alterations, Wayside Honor Rancho, Castaic, LOS ANGELES, CALIF. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Feb. 8, awarded Mar. 13. CD 2/13, under LB.

Ferrero Ranch Estates, 478 S. San Vicente Blvd., Los Angeles, Calif., Owner Builds, $848,400. 101 frame, stucco dwellings, Folger and Rochelin Sts., etc., PUENTE, CALIF.

Lawrence Constr. Co., 3020 V St., Sacramento, Calif., LB $730,638 (4 bidders) Hollywood Park and Collis P. Huntington Elementary SCHOOLS, SACRAMENTO, CALIF. Sacramento Unified School Dist., 1619 N St., Sacramento, Calif. CD 7/14.

CANADA

BUILDINGS—LB & CA

Swanson Constr. Co., Ltd., 1361 Erin St., Winnipeg, Man., LB $932,325 (10 bidders) 1 story, partial bsmnt. 164x300 ft., rein.-con., structural steel, concrete block, brick PHYSICAL TRAINING bldg., WINNIPEG, MAN. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Mar. 1. CD 2/6.

▲ Pigott Constr. Co. Ltd., Pigott Bldg., Hamilton, Ont., CA $1,000,000. substructure of new blooming MILL, incl. sheet piling, excavation and foundation, HAMILTON, ONT. Steel Co. of Canada Ltd., Wilcox St., Hamilton, Ont. Awarded Mar. 14. CD 11/29.

Jackson-Lewis Co. Ltd., 80 King St. W., Toronto, Ont., CA, $500,000, 1 story, 75,000 sq. ft., steel masonry PLANT and OFFICES, OAKVILLE, ONT. Duplate Canada Ltd., 50 St. Clair W., Toronto, Ont. Allward & Guimlock, 57 Bloor St. W., Toronto, Ont., archts. Awarded Mar. 16.

Elrose Construction, 6201 Cote St. Luc Rd., Montreal, Que. Owner Builds. $880,000. HOUSING, MONTREAL, QUE. David Reich, 5810 Cote St. Luc Rd., Montreal, Que., archt.

Shindel & Constant, Inc., 4947 Isabella Ave., Montreal, Que. Owner Builds. $400,000. two 3 story, bsmnt. 81x88 ft., brick, block APARTMENTS, MONTREAL, QUE. Ben-Ami Shulman, 5174 Cote des Neiges Rd., Montreal, Que., archt.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

General Electric Co., River Rd., Schenectady, N. Y., U. S. A. CA, 3,000 kw. swimming pool type atomic reactor, MADRID, SPAIN. Spanish Nuclear Energy Comn., Madrid, Spain.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

† Panama—BA 4/20—Bureau P. Rds., Dpt. Commerce, opened at Highway Authority of Panama, Panama City. Proj. 16, Sec. 2, approx. 33 mi. grading, drainage, base course and bridges between Aguadulce and Santiago.

HEAVY CONSTRUCTION—LB & CA

▲ Tecnica Constructora C. A., Caracas, Venezuela, CA Est. $6,300,000. spillway for Rio Guarico Irrigation and Dam Proj., VENEZUELA. Ministry of P. Wks., Caracas, Venezuela. CD 12/12/47.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ Lebanon—BA 4/17—National Litani Auth., Immeuble Channage, Rue Bechara El Khouri, Beirut, excavating and lining of diversion tunnel, first of a series of construction works on the Development Plant for the Litani River Basin, tunnel with diameter of 2.40 meters to run 9,050 meters through the Lebanon Mountains with expectations of encountering large quantities of water under high pressure. Firms interested in being admitted to the bidding on this project must submit concurrently with their applications a series of background documents on their firms. A detailed listing of the required documents may be obtained on request from the Commercial Intelligence Division, Bureau of Foreign Commerce, U. S. Dpt. of Commerce, Wash. 25, D. C., U.S.A. CD 5/24/55.

PROPOSED PROJECTS

WATER SUPPLY

▲ N. M., Albuquerque—City, City Hall, expansion of water department new trunk lines, resvoir addns., new wells. $2,030,000. Bonds voted 10/4. CD 9/20.

▲ N. Y., Buffalo—City, Dpt. P. Wks.; George J. Goetz, comr., City Hall, 48 in. water main from Massachusetts Ave. pumping station to Rees St. storage tank, $1,240,000; 16 in. main in E. Delavan Ave., $225,000; 4 m.g. ground storage tank, $475,000. CD 6/24/45.

▲ O., Akron—City, Leo Walter, Serv. Dir., City Hall, 681-acres, site purchased, Bridge Creek Dam. Plan to have reservoir in use by early 1958. $3,000,000. Wendall LaDue, c/o water supt.

▲ Tex., San Antonio—City, City Hall, bond election Mar. 24, 144 mi. water lines, $10,975,000; Olmos Basin Water Pump Plant, $2,449,000; Canyon Dam Reservoir (participation for domestic reserve water supply) $1,500,000; modernization of artesia water

(Continued on page 124)

Wide bowl-opening on Rear-Dump provides easy entry, big target for shovel, dragline, or conveyor loader. Units come in 11, 22, and 35-ton capacities.

Smooth, streamlined, unobstructed body dumping at 66° angle readily sheds sticky material.

Hauls to overburden dump are made at speeds up to 32 mph by this C Rear-Dump.

Big-tire haulers beat mud problem

A Canadian company had the problem of stripping 30 to 75-ft. layer of wet clay out of rock pockets. Soft and sticky with trapped-in moisture, this overburden was loaded by draglines, and hauled half a mile to waste dumps. Four C Tournapull Rear-Dumps were used to speed hauling.

Exceptional mud-ability

As owners everywhere have found, Tournapull Rear-Dumps go through mud which stops conventional truck-type haulers. On this overburden job, for example, these Rear-Dumps worked out of deep mud-holes in the pit and off dumps so soft a man could not walk through them. The exceptional mud-ability they showed is due partly to traction of big 21.00 x 25 low-pressure tires . . . partly to electric power-steer through geared kingpin which "walks" Tournapulls out of trouble . . . partly to exclusive differential which *automatically* transfers power from slipping wheel to wheel on firmer footing.

On rough haul-roads, Rear-Dumps with 5'6" diameter tires haul faster than trucks. The big tires grip and roll over the bumps, cushion machinery and operator from road shocks.

Turn around non-stop

These Rear-Dumps also work faster and with greater safety in narrow quarters than conventional haulers. They turn around in much less space. When bowl is raised, they shorten wheel-base to turn non-stop in an area about 1/3 less their overall length. This maneuverability speeds haul on narrow roads, reduces spotting time at shovel and dumps.

Dump fast and clean

Practically no clean-up is needed on the dump. With front-wheel drive, Rear-Dumps back safely to edge of bank. Bowl swings behind and below rear wheels . . . loads fall free and clear over the edge, with little spillage, seldom call for clean-up.

Ask your LeTourneau-Westinghouse Distributor to show you first-hand how Rear-Dump advantages can pay off on your work.

Rear-Dumps now available with optional tailgate.

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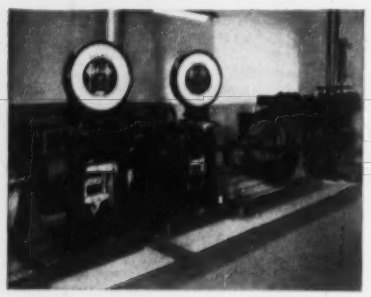

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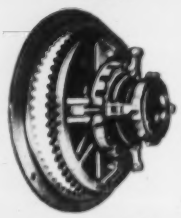

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(Continued from page 122)

pumping station, $788,800; new water pumping station, 34 St. Location, $782,200; modernization of 4 water pressure regulating tanks, $197,000; Pressure Regulating Water Tank No. 2, $175,000; Pressure Regulating Water Tank No. 1, $150,000; rehabilitation small water pump stations, $169,000; modernization of Mission Pumping Station, $686,500; modernization of Old Market St. Water Pump Station, $500,000.

SEWERS, WASTE DISPOSAL

▲ **Calif., Walnut Creek**—Central Contra Costa Sanitary Dist., 1822 Mt. Diable Blvd., Walnut Creek, sanitary sewers in central section of county. $7,000,000. Bond election in early fall. Brown & Caldwell, 66 Mint St., San Francisco, sanitary consult. engrs.

▲ **Colo., Derby**—South Adams County Water & Sanitation Dist., 6595 E. Seventh Ave., voted $2,000,000 bonds, Mar. 13, sewerage system imprvs. Ripple & Howe, 833 23 St., Denver, Zone 5, engrs.-archts. CD 1/24.

▲ **N. J., Somerville**—Somerset Raritan Valley Sewerage Auth., Administration Bldg., sewage collection, treatment plant, secondary sewerage facilities, $1,000,000. 4 sets of plans under consideration. Whitman, Requardt & Assocs., 1304 St. Paul St., Baltimore, Md., consult. engrs. CD 4/30/46.

▲ **N. M., Albuquerque**—City, City Hall, sanitary sewer imprvs., expansion of sewage treatment plant, new trunk lines and chlorinating stations, $1,307,000; storm sewer imprvs., northeastern portion of city, $1,166,000. Bonds voted 10/4. CD 9/20.

▲ **N. Y., Rochester**—City, City Hall, expansion of sewage treatment plant, $8,100,000. Nussbaumer, Clark & Velzy, 827 Franklin St., Buffalo, Zone 2, consult. engrs. CD 3/7.

▲ **O., Warren**—Bd. Comrs. Trumbull Co., Court House, having feasibility survey made by Williard F. Schade & Associates, consult. engrs. Chester-12th St. Bldg., Cleveland, Zone 14, sewerage project for Lordstown, Weathersfield, Warren and Newton Twps., to solve problems in connection with new Chevrolet plant at Lordstown. To exceed $1,000,000. Carl W. Ziegler, co. engr.

BRIDGES

▲ **O., Akron**—City, Leo G. Walter, serv. dir. City Hall, viaduct over railroad crossing on Manchester and Wilbeth Rds. $2,000,000. Beisaenger & Hoch, 661 W. Market St., consult. engrs. CD 7/13.

STREETS AND ROADS

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford,

Hartford Co.—relocating Rte. 6, approx. 4 mi., Farmington, New Britain, Newington, Wethersfield, $8,000,000.

relocating Rte. 71 approx. 2 mi., New Britain, Newington, West Hartford, $6,000,000.

imprv., widn. Main St. Rte. 176, Newington, $100,000.

▲ **Conn., Fairfield**—Town, Town Hall, hy. imprvt. and storm drain installation. $1,000,000.

▲ **OHIO**—State Hy. Dpt., State Office Bldg., Columbus, Zone 2,

Trumbull Co.—imprv. Rte. 82 from Vienna to Pennsylvania border near Sharon, approx. 8 mi. 4-lane divided hy. with limited access. $4,400,000. DeLeuw, Cather & Brill, 202 E. 44 St., New York, N. Y., consult. engrs. Bids about Sept. 18.

▲ **Tex., Houston**—City, City Hall, exten. Studewood St. into Memorial Freeway. $2,500,000. Frank Baldwin, city utilities engr.

EARTHWORK, WATERWAYS

▲† **Connecticut**—U. S. Eng., 66 Charles St., Waterbury relocating 5.4 mi. Naugatuck Div., New Haven Railroad, relocation of 6 mi. State Hy. 8; rolled fill earth and rock dam 136 ft. high, side channel spillway 290 ft. long, 910-acre reservoir. Thomaston, Plymouth, Harwinton and Litchfield. $16,000,000. CD 2/10.

▲† **Oklahoma**—Bureau Reclamation, Dpt. Interior, C St. between 18 and 19 Sts. N. W., Wash., D. C., Washita River Basin Proj. for irrigation ($11,378,000); waterworks ($12,408,000); flood control ($15,417,000); fish and wild life ($839,000); recreation ($550,000); Project includes Fort Cobb reservoir and earthen dam on Cobb Pond and the Foss Reservoir. Total est. $40,600,000 (no appropriation). CD 9/7/44.

▲ **Tex., Port Arthur**—City, City Hall, earthen levee. $1,739,800. Freese & Nichols & Turner, C & I Life Bldg., Houston, consult. engrs. CD 2/6/46.

AIRPORTS

▲ **Ala., Birmingham**—AIRPORT EXPANSION—Birmingham City Aviation Advisory Council, City Hall, airport expansion, first phase, incl. runway exten., taxiway revamping. Total est. $4,000,000. Rader Eng. Co., Congress Bldg., Miami, Fla., consult. engr.-archt. CD 8/2.

† **Ind., Fort Wayne**—AIR NATIONAL GUARD—Major Gen. Harold A. Doherty, adj. genl. of Indiana, State House, Indianapolis, 2 story administrative headquarters for Air National Guard, Baer Field. $500,000. Bids in Spring.

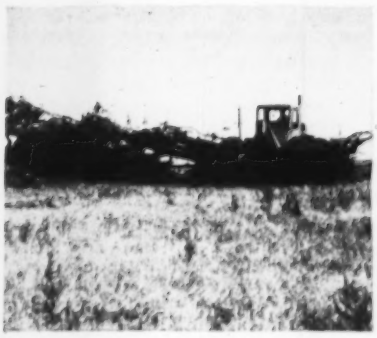
LATIN AMERICA

▲ **Brazil, Sao Paulo**—PLANT—W. R. Grace & Co., 3 Hanover Sq., New York 4, N. Y. and Eriez S. A.

(Continued on page 126)

Pictures of a tractor in a hurry!

On this road-widening job near Denison, Iowa, a grove of 60 ft. trees ranging from 10 to 15 inches in diameter had to be removed. Tournatractor did the entire job alone. First it dozed dirt from around the base of each tree to cut surface roots. Then, with dozer blade raised near maximum 54 inches, Tournatractor pushed trees over. Complete uprooting task averaged 3 to 4 minutes per tree. Said the tractor operator, Elmer Schwarz, "This rig did a wonderful job in tree removing!" Its instant-shift transmission kept maximum "push" on the tree at all times . . . quick-shift into high-speed reverse let unit move away quickly from falling trees.



Speeds clean-up, push-loading, & pulling

After uprooting trees, Tournatractor pushed them 300 ft. for disposal in a field. Push took 2½ minutes; return took about 40 seconds. "Tournatractor did one job fast and was ready immediately for another," comments operator Schwarz. Other assignments included push-loading scrapers, pulling rollers, and handling other important tractor work.

On 40 ft. push, dozes 115 yds. hourly

When trees were removed, Tournatractor dozed in material from 50 ft. on both sides of the road to raise grade 2 ft. and to cut down banks prior to major scraper dirtmoving. Loads averaged 2½ to 3 pay yds. per push. On 80 ft. cycles, push, spread, and return took 1.3 minutes. Big low-pressure tires helped compact material as it was spread on the run.

Travels job-to-job at 19 mph

Crawford County Hwy. Dept. owners, report Tournatractor goes virtually anywhere at speeds to 19 mph. Emergency jobs 5 miles away can be reached in about 20 minutes. As Job Supt. Leonard Hassett summarizes, "One of Tournatractor's advantages is that it can move quickly and efficiently." Let us demonstrate this speed advantage on your job. Write for details.

Tournatractor—Trademark Reg. U.S. Pat. Off. T-823 P-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

THE OLD WAY

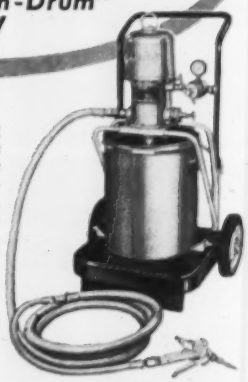
If you handle semi-solids manually, you have a slow, messy procedure. If your material is so heavy it won't pour . . . or if it even stands by itself . . . now you can *pump* it!

PUMP YOUR HEAVY STUFF

"Direct-from-Drum"

THE *New* WAY

● Now, with Graco's amazing Powerflo pumps, you can apply the economies of pumping to a wide range of heavy, nearly solid materials. Air-operated Powerflos pack tremendous power, mount easily into pails or drums. Powerflo pumps can supply material for extruding, spraying, transferring. Write for a copy of the new Powerflo Catalog!



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• UNIFORM STRESS PREVENTS TEARING

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The everlasting choice in long steel tapes! Handsome, top-quality, leather case is hand-stitched over rust-resisting metal liner. Hand-stitching ensures a better, longer wearing outside cover. Exclusive Chrome Clad line is rust and corrosion resistant — will not chip, crack or peel. Bold black markings can't wear off. 25 - 50 - 75 - 100 foot lengths.

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PRECISION TOOLS
FROM YOUR SUPPLY STORE

THE LUFKIN RULE COMPANY
SAGINAW, MICHIGAN

400 BETTER MEASURE WITH *Lufkin*

(Continued from page 124)

Productos Magneticos e Metalurgicos (sub of Eriez International Corp.), 1945 Grove Dr., Erie, Pa. (U.S.A.) magnet alloys plant to produce Alnico permanent magnets: $1,000,000.

AMERICANS ABROAD

▲ Iran, Tehran—HOTEL—Iranian Crown Lands Administration, Tehran, Iran, plans by Design, Inc., 906 Sidney St., St. Louis 4, Mo. 400-room hotel. $7,000,000.

PUBLIC BUILDINGS

▲† Ariz., Fort Huachuca—QUARTERS, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., plans by Scholer, Sakellar & Fuller, 2566 N. Campbell Ave., Tucson, 3 story, concrete block officers quarters and swimming pool. $1,200,000.

▲ Ark., North Little Rock—SCHOOLS—North Little Rock School Bd., North Little Rock, voted bonds, schools $1,500,000. CD 2/1.

▲ Calif., Fresno—LIBRARY—Fresno Co., Court House, plans by Swartz & Hyberg, Rowell Bldg., 2 story, 81,000 sq. ft. brick, rein.-con. library $1,450,000. CD 4/22/54.

Calif., Monterey—OFFICE—Dpt. Natural Resources, State Office Bldg. No. 1, Sacramento, state office bldg. $500,000.

▲ Calif., Ontario—SCHOOLS—Chaffey Union High School Dist., 4 and Euclid Sts., $3,000,000 bond election April 27, new high school in Ontario and complete Upland High School, Upland. CD 12/20.

▲ Calif., Pomona—SCHOOLS—Pomona School Dist., Pomona, voted $7,025,000 bonds, schools. CD 3/2/53.

▲ Calif., San Francisco—HOUSING—San Francisco Housing Auth., 440 Turk St., plans by Hertzka & Knowles, 85 Post St., and H. C. Baumann, 251 Kearny St., 352-unit housing at Double Rock Housing Project, $3,500,000.

▲ Calif., San Leandro—SCHOOLS—San Leandro Unified School Dist., 452 W. Joaquin Ave., voted $6,000,000 bonds, 2 new schools, 5 schools addns., high school. Work in 18 months. CD 1/4.

Calif., Ukiah—SCHOOL—Ukiah Union High School Dist. plans by Ingle & Weaver, 108 W. Perkins St., Ukiah, for cafeteria, and plans by C. A. Caulkins, Rosenberg Bldg., Santa Rosa, for classrooms bldg. $800,000. CD 3/14.

Conn., Cheshire—REFORMATORY—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Smith & Persse, 956 Chapel St., New Haven, 3 story, brick, concrete Conn. Reformatory addn. $650,000. Hubbard, Lawless & Blakesley, 110 Whitney Ave., New Haven, engrs. Henry A. Pisterer, 121 Whitney Ave., New Haven, consult engr. CD 1/27.

▲ Conn., Newington—SCHOOL—Town Bd. Educ., Newington, Junior High School, $1,000,000.

▲ D. C., Wash.—MUSEUM OF HISTORY, etc.—General Services Admin., General Services Bldg., Wash. 25, D. C., plans by McKim, Mead & White, 101 Park Ave., New York, N. Y. Museum of History and Technology, Smithsonian Institution, $36,000,000. (No appropriation). CD 10/26/45.

Fla., Clearwater—SCHOOL—Pinellas Co. Bd. P. Instruction, 707 Mirror Lake Dr., plans by Glenn Q. Johnson, 800 49 St. N., St. Petersburg, Meadow Lawn Junior High School, $500,000.

▲ Ill., Moline—SCHOOL—Moline Bd. Educ., 1629 11 Ave., plans by Swanson & Malwald, First Natl. Bank Bldg., Senior High School, 25 Ave at 34 St., $3,500,000. CD 2/25/54.

Ind., Bloomington—POLICE TRAINING SCHOOL—Bd. Trustees, Indiana University, Bloomington, general police training school bldg., Security Training Institute, $500,000. Work in the fall.

Ind., Michigan City—PRISON DORMITORY—Div. P. Wks., State of Indiana, State House, Indianapolis, plans by Wayne M. Weber, 709 Wabash Ave., Terre Haute, Ind. dormitory, Indiana State Prison. $700,000.

▲ Ind., Rushville—HIGH SCHOOL—Rushville School Bldg. Corp., Rushville, plans by McGuire & Shook, 1400 Fletcher Bank Bldg., Indianapolis, 1 story, masonry high school. $1,200,000. Bevington, Taggart & Fowler, K of P Bldg., Indianapolis, mech. engrs. CD 4/30/53.

Iowa, Iowa City—SCHOOL—Bd. Directors School Bd., Iowa City, plans by Louis Kingscott & Assoc., 605 Putnam Bldg., Davenport. Junior High School, First Ave. and J St. $500,000.

▲ Kan., Merriam—SCHOOL—Shawnee-Mission High School Dist., Johnson Co., voted $4,000,000 bonds Mar. 7, Senior High School, Nelville, Sharp & Simon, 12 and Walnut St. Bldg., Kansas City, Mo., archts.

▲ Md., Towson—SCHOOL—Baltimore Co. Bd. Educ., Aigburth Rd., Zone 4; plans by Smith & Veale, 2127 N. Charles St., Baltimore, Zone 18, Dundalk Senior High School, incl. library, gymnasium, vocational and industrial bldgs., Dundalk. $1,000,000.

Mass., Ayer—SCHOOL—Town, School Dpt., plans by Perley F. Gilbert & Assoc., Inc., Sun Bldg., Lowell, elementary school. $350,000.

▲ Mass., Worcester—HOSPITAL—City, Trustees City Hospital, 71 Jaques Ave., plans by Isadore Rosenfeld & E. Todd Whelan, 45 W. 45 St., New York, hospital addn., 71 Jaques Ave. $1,750,000.

Mich., Churchill—SCHOOL—Bd. Educ., Churchill Schools, constr. Junior High School, $550,000. Bids in April.

Mich., Clarenceville—SCHOOL—Bd. Educ., $750,000 bond election Apr. 23, high school.

(Continued on page 128)

New Trends call for versatility of equipment to insure future profits

Two important trends are building up in the earthmoving business: (1) more small-yardage contractors are taking "big-yardage" jobs; (2) More of the normally "big-yardage" operators are taking only the biggest of the big-yardage jobs.

Profitable handling of big-yardage jobs takes big equipment but doesn't always mean you should lay out all your new equipment investment for big-yardage production machines.

Here's Why:

Almost every big-yardage job breaks down into a number of individual sections, some with heavy cuts and fills, some with light yardage, all including some scattered, odd-lot, small-yardage assignments. These small-yardage operations are done more profitably by flexible small-yardage scrapers designed for quick moves, high-speed performance, and flexibility of fleet size to fit the job.

These smaller units can fit into big machine fleets for production dirt-moving, split into small fleets of 2 or 3 units for smaller production assignments, and self-load on one-man clean-up jobs. They show a profit on each type of operation and give flexibility to handle big-yardage with maximum economy.

Follow the trend

Big-yardage machines can make good profits on the heavy production sections, but these profits can bleed away by having these big machines waste their time on small-yardage cuts or odd-job clean-up. And you can also lose your profits of modernization by using your older, slow, expensive-to-move equipment to do this light-yardage work that calls for modern hit-and-run handling.

To insure *minimum* equipment investment and *maximum* profits in the big road program ahead, it is important to analyze advantages of versatility. You need to consider the insurance value of ability to earn on a wide variety of future big or small jobs. To better understand this problem you'll be interested in the following discussion of the production ability of our D Tournapull.

"D" is big enough (6.6 cu. yds. struck, 7.5 heaped) for profitable operation in pusher fleets. Or units can push-load each other in pairs. Or they can serve as a one-man work crew self-loading on clean-up, and on odd-job assignments.

Speed cuts cost

The "D" with 28 mph travel speed drives anywhere via highway or cross-country to handle scattered jobs . . . loses no production time in loading, blocking, unloading.

D Tournapull works in tight quarters and around obstructions that seriously interfere with other types of equipment. Turns non-stop in 26'.

The "D" has a larger capacity than the average small dump truck, loads itself, or can be push-loaded, has fast haul speeds . . . spreads evenly to fit any required lift . . . does an excellent scraper finishing job. It can also serve as a fast hauling unit.

D Tournapull prime-mover can interchange from scraper to rear-dump, side-dump, flatbed, crane, or skidding arch. Any of these hauled units can be purchased at about ¼ the cost of original equipment.

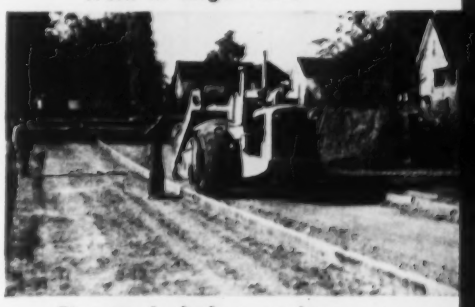
Ask your LeTourneau-Westinghouse Distributor for an on-the-job demonstration . . . see for yourself how Tournapull versatility can insure your future profits.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-925-G-b

Handle clean-up

Work as a team

Work in large fleets



Fine-grade before paving

Drive job-to-job

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

(Continued from page 126)

▲ **Mich., Detroit**—SCHOOL—City, Bd. Educ., 1354 Broadway, Mark Twain Elementary School, southwest section. $1,000,000.

Mich., Detroit—WAREHOUSE—City, Bd. Educ., 1354 Broadway, 2 story warehouse for canned foods and school supplies, Willis St. $500,000. Milton F. Wagnitz, city engr.

▲ **Mich., Detroit**—PUBLIC WELFARE—City, Glenn C. Richards, City-County Bldg., Dpt. of Public Welfare Bldg. $1,000,000. Milton F. Wagnitz, city engr.

▲ **Mich., Eloise**—HOSPITAL—Bd. Supervs. Wayne Co., City-County Bldg., Detroit, Zone 26, plans by James A. Hamilton Assoc., 428 S.E. Walnut St., Minneapolis, Minn., and Smith-Hinchman & Grylls, Inc., 800 Marquette Bldg., Detroit, engrs.-archts., general hospital, $9,000,000; laundry, $1,000,000. CD 4/12/55.

▲ **Mich., Escanaba**—POWER PLANT—City, City Hall, municipal power plant, incl. steam generator, turbine, condenser, deaerator, exchanges, boiler feed pumps, $6,000,000. Black & Veatch, 4706 Broadway, Kansas City 12, Mo., consult. engrs.

▲ **Mich., Livonia**—SCHOOL—City, Bd. Educ., Livonia Pub. Schools, voted $8,000,000 bonds Mar. 15, Schools. CD 2/23.

▲ **Mich., Traverse City**—SCHOOL—City, Bd. Educ., high school, $1,978,700.

▲ **Mo., Kirksville**—CLASSROOM, etc.—Northeast Missouri State College, Walter H. Ryle, pres., Kirksville, classroom, $800,000-$975,000; heating and power plant renovation, etc., $390,000.

▲ **Mo., Maryville**—DORMITORY—Northwest Missouri State College, Maryville, dormitory bldgs. for men and women. $1,500,000. CD 12/29/54.

▲ **Mo., North Kansas City**—SCHOOL—Bd. Educ., 23 and Centry Sts., voted $3,200,000 bonds Mar. 6, Senior High School, Junior High School, elementary school.

Mo., St. Louis—LIBRARY—St. Louis Public Library, Jacob M. Lashly, pres. Library Bd., 13 and Olive Sts., Zone 1, plans by Joseph H. Senne, c/o owner, 2 story annex for main library, 17 and Locust Sts. $500,000.

▲ **Mo., St. Louis County**—BUILDINGS—St. Louis State Training School for Feeble Minded, Dr. A. A. Hines, supt., Bellefontaine and Hall Rds., bldgs. for custodial care of mentally deficient children, $750,000-$1,155,000; recreational bldg., $690,000. CD 7/20/53.

▲ **Neb., Omaha**—LIBRARY—City, City Hall, public library, $1,500,000.

▲ **Neb., Omaha**—GARAGE, etc.—Metropolitan Utilities Dist., 18th and Harney Sts., plans by Steele, Sandham & Steele, Electric Bldg., garage, warehouse, service bldg., 63 and Bancroft Sts. $1,300,000. Henningson, Durham & Richardson, Inc., 2962 Harney St., archts.-engrs. C. F. Holdrege, c/o owner, engr. CD 3/14.

N. J., Hillsdale—SCHOOL WING—Bd. Educ., Pascack Valley Regional High School Dist., Hillsdale, plans by Reginald E. Marsh, 240 E. 15 St., New York, N. Y., high school wing, $750,000. CD 10/1/53.

▲ **N. Y., Eastview**—HOSPITAL BLDGS.—County Executive Westchester Co., County Office Bldg., White Plains, out-patient clinic, $1,346,000, constr. in 1957-58; exten. psychiatric bldg., $1,126,000, constr. in 1957-58; central maintenance bldg., $325,000, constr. in 1957; exten. operating rooms, $350,000, constr. in 1958-59; quarters for medical staff, $400,000, Grassland Hospital.

▲ **N. Y., Lackawanna**—SCHOOL—Bd. Educ., voted $3,650,000 bonds Mar. 15, high school, $3,200,000; repairs to present high school, $450,000, John Edgar 33 Rosary Ave., archt. CD 2/24.

▲ **N. Y., Malverne**—SCHOOL—Unified School Dist. No. 12, Malverne, plans by Frederic P. Weidersum Assoc., 85 W. Hawthorne Ave., Valley Stream, high school, on 38 acre Pines Pond Site. $2,000,000. Bids after Apr. 1. CD 6/28.

▲ **N. Y., Plainedge**—SCHOOL—Bd. Educ., Schwarting School addn., 14 acre tract on Baldwin Dr., $700,000; elementary school on 7½ acre tract on Hempstead Turnpike, $750,000. CD 11/10.

N. Y., White Plains—RECREATION ACTIVITY CENTER—County Executive, Westchester Co., County Office Bldg., recreation activity center at County Center. $700,000. To go ahead after 1959.

▲ **O., Apple Creek**—HOSPITAL—State Dpt. Mental Hygiene & Correction, Dr. John D. Porterfield, dir., State Office Bldg., Columbus, plans by Trefon Sagadencey, 429 Chestnut St., Cuyahoga Falls, Apple Creek State Hospital addn. $1,000,000. CD 1/12.

O., Cambridge—HOSPITAL—State Dpt. Mental Health & Hygiene, 220 S. Parsons St., Columbus, plans by Arsene Rousseau, Mahoning Bank Bldg., Youngstown, hospital addn., Cambridge State Hospital. $750,000. CD 1/12.

O., Cambridge—RECEPTION and INTENSIVE THERAPY UNIT—State Dpt. Mental Hygiene & Correction, Dr. John D. Porterfield, dir., Columbus, plans by Arsene Rousseau, Mahoning Bank Bldg., Youngstown, 120-bed recention and intensive therapy unit, Cambridge State Hospital. $750,000.

O., Cleveland—RECEIVING HOSPITAL—Ohio Dpt. Mental Hygiene & Correction, Dr. John D. Porterfield, Dir., Columbus, plans by McGeorge, Hargett & Assocs., 7016 Euclid Ave., Cleveland, Zone 3, Cleveland Receiving Hospital addn. $700,000. CD 1/12.

O., Cleveland—MEDICAL, etc.—State Dpt. Mental Hygiene & Correction, Dr. John D. Porterfield, dir., Columbus, plans by Dalton & Dalton, Old Arcade, Cleveland, Zone 14, 100-bed, medical and surgical unit, Cleveland State Hospital, 4455 Turney Rd. $750,000. CD 1/12.

O., Macedonia—HOSPITAL FACILITIES—State Dpt. Mental Hygiene & Correction, Dr. John D. Porterfield, dir., Columbus, plans by Beisaenger, Hoch & White, 661 W. Market St., Akron, and McGeorge, Hargett & Assocs., 7016 Euclid Ave., Cleveland, Zone 3, central facilities expansion, Hawthornden State Hospital, $585,000. CD 1/12, under O., Cleveland.

▲ **Pa., Johnstown**—SCHOOL—School Dist. plans by Jos. Triglia & Assoc., Masonic Temple, Ebensburg, Jos. Johns Elementary School. $1,000,000.

Pa., Sharon—SCHOOL—School Dist. plans by Hunter Heiges & Gross, 1270 E. State St., Prospect Heights School, $500,000. CD 3/20.

▲ **Tex., Houston**—GARAGE—City, City Hall, plans by Kenneth Franzheim, 802 Lovett St., 2-level underground parking garage, public mall and gardens on ground level, Smith, McKinney, Walker and Milam Sts. $2,500,000. CD 5/24/54.

▲ **Tex., Richmond**—SCHOOLS—Lamar Consolidated School Dist., Richmond, voted bonds Mar. 17, Senior High School, $650,000; elementary school, $350,000. CD 3/9.

▲ **Wash., Seattle**—LIBRARY—Seattle Public Library, 4 Ave. and Madison St., voted bonds, central library, $4,500,000. CD 11/28.

▲ **Alta., Lethbridge**—POWER HOUSE—City, City Hall, power house exten. $1,000,000. Haddin, Davis & Brown Ltd., 1134 8 Ave. W., Calgary, consult. engrs. CD 8/31.

▲ **Que., Louisville**—SCHOOL—La Commission Scolaire de Louisville, Louisville and Dept. Social Welfare, Parliament Bldgs., Quebec City, plans by Germain Chobot, 236 St. Jean St., Quebec City, arts and trades school. $1,000,000. CD 3/14.

COMMERCIAL BUILDINGS

Ala., Birmingham—HOMES—Screws Building Co., 1648 Bessmer Rd., 75 homes in Crestwood and Belview Heights Sections, $900,000.

▲ **Calif., Costa Mesa**—SHOPPING CENTER—Dennis Hoagland, c/o R. H. Reisinger, archt., 867 S. Coast Blvd., Laguna Beach, shopping center, incl. 22 stores, 8 acres of parking, $2,000,000.

▲ **Colo., Denver**—MOTOR HOTEL—Del E. Webb Constr. Co., S. 23 Ave., Phoenix, Ariz., motor hotel, near 14 St. and Speer Blvd. Site optioned. $15,000,000.

▲ **Conn., Bristol**—HOUSING—Birchwood Heights, Farmington Ave., 71-unit housing development, Vera Rd. $1,491,000.

▲ **Conn., New Haven**—OFFICE—Edward Everest, 110 Whitney Ave., and Milton Schwartz, 329 Bellevue Rd., plans by Carl R. Blanchard, Jr., 111 Whitney Ave. 7 story, 105,000 sq. ft. office, Whalley Ave. between Howe and Dunlap Aves. $2,200,000.

▲ **Conn., Stamford**—OFFICE—Dorr-Oliver, Inc., Barry Pl., plans by Sherwood, Mills & Smith, 65 Broad St., office, $1,500,000.

(Continued on page 131)

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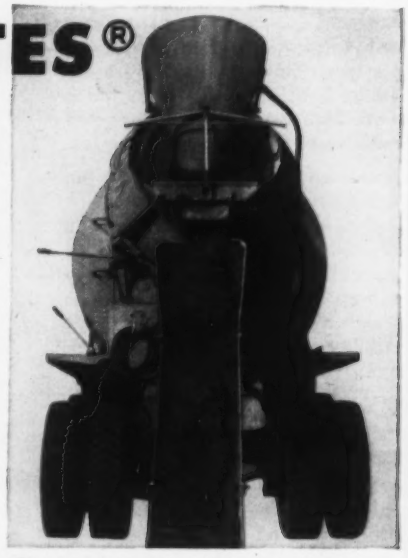

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1956 TRANSCRETE Catalog
Construction Machinery Co., Waterloo, Iowa

Earthwork Ahead of schedule on 49 miles of lateral ditches for Columbia-River-Basin Irrigation Project

In the "Big Bend" country, State of Washington, main canals for the Columbia-River-Basin Irrigation Project are complete. These canals carry water 150 mi. from Grand Coulee Dam to the 1¼-million acre "Basin", where ½ million acres of land are irrigated.

Branches from the main canals are now being built for distribution of water to the remaining ¾ million acres of dry and dusty sage-brush land. The irrigated land, in units of 65 to 110 acres, will be sold to farmers for gardening and grazing at prices from $25 to $85 per acre. This huge project is being constructed for the Bureau of Reclamation, U. S. Dept. of Interior.

Cherf Bros. & Sandkay, Ephrata, Wash., have 5 C Tournapulls helping to build 49 miles of lateral ditches for this project. These laterals are built by the "economic fill" method (see diagram). "C's" build a flat road-like runway, averaging 2' high, 12' wide, firmly compacted. Dragline follows, digging ditch in center of "run", piling dirt along each side to increase height of banks. Water level will be maintained about 6" below top of compacted dirt level. Eventually, ditch will be cement-lined.

"Really move muck"

Describing the performance of C Tournapulls used for building the "run", Roy Johnson, of Cherf Bros. & Sandkay, said, "We like Tournapulls because they get around fast, really move muck! Perfect size for this kind of job." Tournapulls' top travel speed to 28 mph helped on both long and short hauls. Easy maneuverability, electric controls, and big brakes are made for fast handling all through the cycle.

"Move dirt cheaper"

Supt. Robert Smith added: "Tournapulls keep us ahead of schedule, move dirt cheaper than other rigs." Smith especially liked the way operators could use Tournapull's positive electric power-steer to pivot prime-mover from side to side where footing was soft. This permitted "walking" the drive wheels out of tough spots while making fast delivery of big loads to the fill.

"Differential makes the difference"

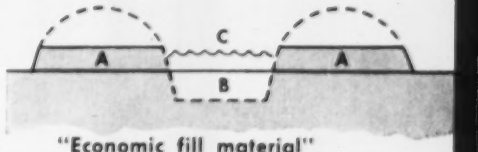
According to Tournapull operator Tom Carder, "These 'Pulls are the only outfits that could do this job. Other rigs would get stuck. It's the Tournapull differential that makes the difference. I sure like 'em!" Carder has had thousands of hours at Tournapull's electric controls. He knows from experience how the power-proportioning differential helps pull through soft going, rides faster and easier on the turns, by automatically transferring power to the wheel on firmest footing.

Why not check with Tournapull owners to find out what these handy, high-speed dirtmovers can do for you? Or, ask for a demonstration on your job! Your LeTourneau-Westinghouse Distributor will be glad to help you in every way to get the real facts for yourself.

C Tournapulls load a mixture of light sandy silt and gravel from a canal cut and haul ¼ mile to build canal banks.

Canal-bed built by spreading thin layers of material, compacted by rolling action of the wide rubber tires of C Tournapulls.

One "C", equipped with tank, used full time to haul water to cuts and fill. Continuous watering helped scrapers get bigger loads out of cuts, aided in compaction of material on fill.



"Economic fill material"

A. Flat, compacted, road-like bed, about 2' high, 12' wide, built by Tournapulls.

B. Average 3' ditch dug by dragline, dirt piled on sides to raise banks.

C. Eventual water-line just below top level of compacted dirt

Tournapull—Trademark Reg. U.S. Pat. Off. P-901-A-b

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

BLAW-KNOX SIMPLIFIED FORMING METHODS ELIMINATE TWO EXPENSIVE STEPS . . .

ON THE UNIVERSITY OF WISCONSIN'S BIG NEW FIELD HOUSE. For this long, wide structure which has to be free from central supports to accommodate football games or ROTC battalion formations, a relatively unique method of construction was required.

The Problem:

To build a concrete arch type building 400 feet long by 200 feet wide, measuring 15 feet high at the sidewalls and 68 feet from the crown of the arch to the dirt floor . . . with no supporting columns or trusses for the thin shell concrete arch and rib beams. The lowest possible construction cost was imperative.

Fitzhugh Scott and Fitzhugh Scott, Jr., Architects

Ammann & Whitney, Consulting Engineers

The Solution: BLAW-KNOX STEEL CENTERING

and Blaw-Knox engineers solved the problem at substantial savings.

First, falsework for the roof arch was designed to be reused 7 times. It was simply moved forward after completion of each pour.

Then, Blaw-Knox engineers considered it more economical to convert the falsework to a tied arch for moving purposes only, thereby eliminating additional sets of steel rail track otherwise required for the central columns. This one feature alone saved costly time and materials. Only two tracks are required instead of the 4 to 6 sets of rails that would normally be necessary to support the 200 tons of centering and move the central columns.

When you have a tough forming contract, discuss your problem with Blaw-Knox engineers in the preliminary planning stage. Blaw-Knox has probably solved similiar problems and saved money for other contractors. There's no substitute for practical assistance when the going gets rough — call in the Blaw-Knox Steel Forms Consultation Service to save money on your next concreting job.

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BLAW-KNOX STEEL FORMS CONSULTATION SERVICE

BLAW-KNOX

(Continued from page 128)

▲ Conn., West Hartford—OFFICE—Wm. A. Mauser, 345 N. Main St., plans by Irving W. Rotnerford, 49 Garden St., Hartford, 2 story, brick office, $1,000,000.

▲ Ill., Chicago—HOSPITAL, etc.—North Western University, 619 N. Clark St., Evanston, plans by Holabird, Root & Burgee, 180 N. Wabash St., and Schmidt, Garden & Erikson, 104 S. Michigan St., hospital and heating plant, 330 E. Ontario St. $2,500,000. CD 11/13/52.

Ill., Chicago—BOWLING ALLEY, etc.—Swiss American Turner Societies, Belmont Ave. and Natoma St., plans by Childs & Smith, 20 N. Wacker Dr., Zone 6, bowling alley, fall gymnasium $500,000.

▲ Ill., Skokie—SEMINARY—Hebrew Theological College, Orthodox Seminary, 3448 Douglas Bldg., Chicago, seminary, 16-acre site, Touhy and Carpenter Sts. $5,000,000.

▲ Iowa, Des Moines—HOSPITAL—Sisters of Mercy, 420 E. Washington Ave., Council Bluffs, plans by Brooks Borg, 815 Hubbell Bldg., Mercy Hospital addn. $2,750,000.

Me., Portland—HOSPITAL—Osteopathic Hospital of Maine, Inc., 335 Brighton Ave., plans by Stevens & Saunders, 187 Middle St., hospital addn. and second wing, 335 Brighton Ave. $500,000. Bids about April 14.

▲ Mich., Jackson—Y.M.C.A. CENTER—Young Men's Christian Assn., George Daniels, pres. Bd. Trustees, Jackson Y.M.C.A. Center between Wesley and Franklin Sts., east of Jackson St., $1,500,000.

▲ Mich., Marquette—HOUSING—U. S. Eng., 600 E. Jefferson St., Detroit, construct and finance 340 housing units, K. I. Sawyer Air Force Base, $3,700,000.

▲ Mo., St. Louis—TECHNOLOGY, etc.—St. Louis University, Very Rev. Paul C. Reinert S.J., pres., 221 N. Grand Blvd., Zone 3, plans by Leo A. Daly, Co., Ambassador Bldg., 411 N. 7 St., Zone 1, 3 and 4 story Institute of Technology Bldg., Laclede Ave. between Grand Blvd. and Spring Ave., $2,500,000; 2 and 3 story arts bldg. for College of Arts and Sciences, Grand Blvd., just south of West Pine Blvd., $2,000,000. CD 12/15.

▲ N. J., Englewood—DWELLINGS—Goodman & Guidera, 33 A West St., 30-home development, 30-acre Dwight Morrow Estate $1,350,000.

N. J., Point Pleasant—HOSPITAL—Point Pleasant Hospital, Pine Bluff Ave., plans by Ferrenz & Taylor, 152 W. 42 St., New York, N. Y., hospital addn. $500,000.

▲ N. J., Red Bank—HOSPITAL—Riverview Hospital, Red Bank, plans by Ferrenz & Taylor, 152 W. 42 St., New York, N. Y., 3 or 4 story hospital addn. $1,225,000.

N. J., Riverside—HOSPITAL—Zurbrugg Memorial Hospital, Taylor St., plans by George Von Uffell, Jr., 30 Warwick Rd., Haddonfield, hospital addn. $850,000.

▲ N. Y., Manhasset—HOSPITAL—North Shore Hospital, Valley Rd., hospital addn., incl. 3 story nursing pavilion and new out-patient facilities, $3,000,000.

N. Y., Brooklyn—APARTMENT—Hubbard Properties, Inc., 16 Court St., plans by Morris Rothstein & Son, 186 Joralemon St., Zone 2, 6 story apartment, 9303 Shore Rd. $600,000.

▲ N. Y., New York—BANK, etc.—15 Broad Street Corp., 11-23 Broad St., plans by Francis Rogers, 219 E. 44 St., New York, Zone 17, bank and office alterations $1,000,000.

▲ N. Y., New York—APARTMENT—Syndicate, c/o Slingerland & Booss, 1860 Broadway, New York, 12 story apartment, 34-50 E. 74 St. $1,000,000.

▲ N. Y., North Tonawanda—HOMES—Niagara Better Builders, Inc., Louis Rossi, pres., North Tonawanda, 312 ranch type homes on 3 streets opposite Mayor's Park, $4,500,000. Constr. about June.

O., Cleveland—HOMES—Kazen Constr. Co., 534 E. 200 St., Zone 19, 30 homes, Bella Dr. near Neff Rd. and E. 185 St. $555,000.

O., Dayton—MOTEL—Ralph Schear & Assoc., c/o Sam Foreman, Royal Motel, Keowee St., 100-unit motel, E. 1st St. with parking on ground level, units 2nd and 3rd floors $750,000.

▲ O., Kent—SHOPPING CENTER—M. DeBartolo Constr. Co., Edw. J. DeBartolo, pres., 2620 Market St., Youngstown, 46-unit 300,000 sq. ft. shopping center, 3,500 car parking area, 66-acre site Rte. 5 between Kent and Stow. $6,250,000.

▲ O., Toledo—STORE—Lasalles Store, Michael Yamin, pres., Huron and Adams Sts., plans by Meyer Katzman & Assoc., 160 E. 56 St., New York, N. Y. and Bellman, Gillett & Richards, 518 Jefferson St., Toledo, O., remodeling first floor store. $500,000.

▲ Pa., Altoona—SHOPPING CENTER—Donovan Co., Oliver Bldg., Pittsburgh, plans by Hunter Caldwell & Campbell, 3601 Fifth Ave., brick, steel 160,000 sq. ft. shopping center. $2,500,000.

▲ Pa., Jenkintown—DEPARTMENT STORE, etc.—John Wanamaker, Inc., 1300 Market St., Phila., department store, shopping center, restaurants, Baederwood Sect. $2,500,000.

▲ Pa., Phila.—HOSPITAL—Jeanes Hospital, Hasbrook and Hartel Aves., plans by George M. Ewing Co., consult. engr.-archt., Western Savings Fund Bldg., hospital expansion. $1,000,000. CD 3/12.

▲ Pa., Phila.—DEPARTMENT STORE—John Wanamaker, Inc., 1300 Market St., department store addn., alterations $1,000,000. CD 7/22/46.

Pa., Sharon—SCHOOL—Sacred Heart R. C. Congregation, Sharon, plans by P. Arthur D'Orazio, Union National Bldg., Youngstown, O., parochial school. $750,000. CD 3/21.

Pa., Sharon—HOSPITAL—Shenango Valley Society of Osteopathic Physicians, Dr. Wendell E. Mook, pres., Sharon, osteopathic hospital, $600,000.

Power Plants Speed Construction

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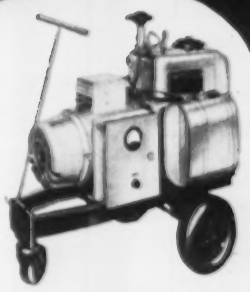
WINPOWER PORTABLE ELECTRIC PLANTS

provide a dependable, low cost power source . . . speed up work performance by operating time and labor saving power tools. Wherever the job—whatever the need—you can count on a WINPOWER Electric Plant to meet your requirements.



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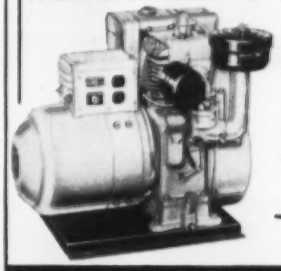

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MAKE NIGHT HOURS PAY with NITE-HAWK

Four 80,000 c.p. flood lights raise to 85 ft.—aim in all directions. Control panel has duplex receptacles for extension light and power tool lines—voltage regulator—circuit breakers—fused circuits.

Tows at highway speeds on heavy-duty trailer with leaf springs—retractable caster wheel. This is the finest, most flexible unit available. 5 KW, 115 or 230 Volt.

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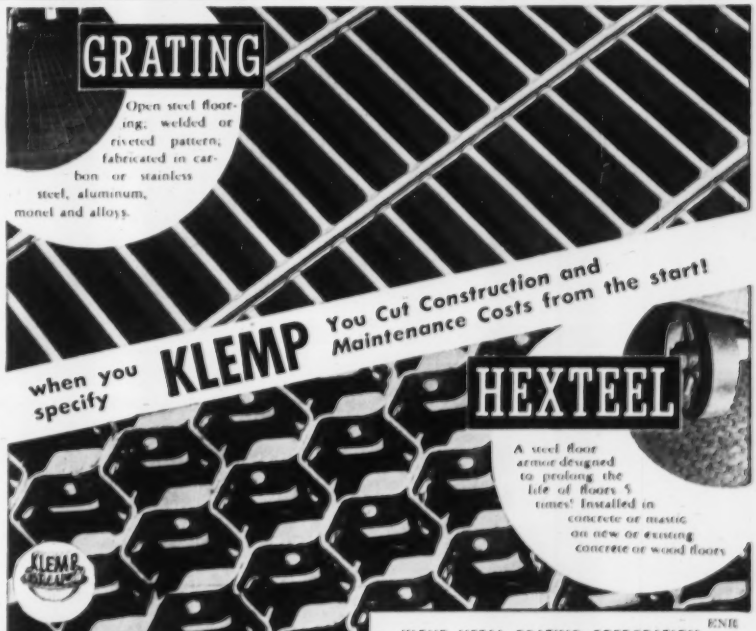

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increases service life 100%

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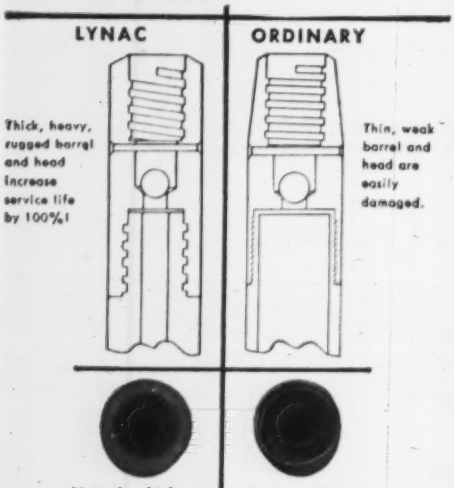
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ORDINARY
Thick, heavy, rugged barrel and head increase service life by 100%!
Thin, weak barrel and head are easily damaged.
Note the thick shoulder of the LYNAC Head.
Compare the thin, easily cracked shoulder of the standard head.

*Patent applied for

Acker engineers have done it again! By improving the design and construction of the standard split tube samplers, Acker engineers increased the service life of their new LYNAC Sampler by over 100%! Look over the drawings at the left and you'll see why. Then, write for literature describing Acker's new LYNAC Sampler.

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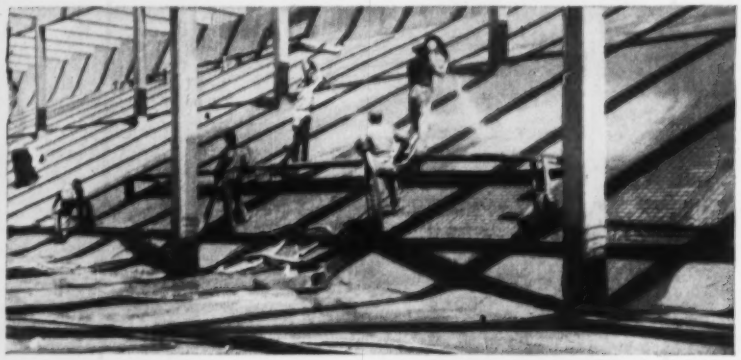


"GUNITE" Lining Restores Reservoir

When the old, open Ballou Park Reservoir at Danville, Va., was improved and covered in 1948, excessive leakage of the old brick lining was stopped with reinforced "GUNITE". The photo shows details of the process. After concrete columns to support the roof were placed, wire mesh reinforcing was laid and the entire reservoir was "GUNITED". Note that the reinforcing and "GUNITE" were carried over the column footings and up the columns approximately three feet to prevent leaking at those points.

The use of "GUNITE" for repair and construction of reservoirs, bridges, buildings, etc., is illustrated and described in Bulletin A3000. We will gladly send a copy at your request. On your letterhead, please.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES – ALLENTOWN, PA., U. S. A.

MANUFACTURERS OF THE CEMENT GUN

▲ Pa., Villanova—COMMERCE AND FINANCE—Villanova University, Villanova, plans by Henry D. Dagit & Sons, 1329 Race St., Phila., commerce and finance bldg. $1,000,000. CD 12/16/53.

▲ Pa., Villanova—DORMITORY—Villanova University, Villanova, plans by Henry D. Dagit & Sons, 1329 Race St., Phila., dormitory. $1,000,000.

▲ S. C., Columbia—COLLEGE CAMPUS—Columbia Bible College, Rev. John Hehl, bus. mgr., 1600 Hampton St., new campus. $1,750,000.

Tex., Corpus Christi—HOTEL—Bobby Manziel, Tyler, improvs., expansion to existing Stonewall Jackson Hotel. $500,000.

▲ Tex., Dallas—SHOPPING CENTER—Markets, Inc., c/o Gerri Von Frellick, c/o Sanger Bros., Main and Lamar Sts., shopping center, at Hy. 67 and 80. $10,000,000.

Tex., Houston—SHOPPING CENTER—Woodlawn Acres Shopping Center, c/o Miles Strickland, 2802 Louisiana St., plans by A. Carroll Brodnax, 1615 Blodgett St., shopping center expansion in Woodlawn Acres Subdivision. $750,000.

Tex., Midland—BANK, etc.—First National Bank, Main and Wall Sts., revised plans by Rob E. Alexander, Jr., 3704 Abrams Rd., Dallas, 2 story bank and office addn. $550,000. CD 3/7.

Wash., Tacoma—DORMITORIES—College of Puget Sound, Tacoma, 2 dormitories, $600,000.

▲ Wash., Tacoma—HOUSES—W. S. Lagerquist, 1001 Pacific Ave., 1,200 houses in Skyline Terrace, $12,000,000. Construction during next 5 years.

W. Va., Charleston—DEPARTMENT STORE—J. C. Penney Co., 112 Capitol St., department store, Washington and Capitol Sts. $800,000.

▲ Wis., Madison—HOUSING—Purchasing & Contracting Office, Truax Air Force Base, construct and finance 523 units Title VIII Housing at Truax Air Force Base, $6,982,050. CD 1/24/55, under Airports.

▲ Man., Winnipeg—HOUSING—A. W. Haag, 257 Bartlett St., housing development, 12-acre site, Kylemore and Morley Aves. $1,000,000.

▲ Ont., Toronto—OFFICE—Atlantic Development Investment Corp. Ltd., c/o realtor, Farlinger & Langner, 752 Yonge St., 14 story, 200,000 sq. ft. office, Yonge and Carlton Sts. $4,000,000.

▲ Ont., Toronto—OFFICE—Samuel Zack Concord Realty Ltd., c/o Lipton & Dashkin, archts., 33 Bloor St. E., 7 story, 63,000 sq. ft. office, 181-5 Bay St. $1,000,000.

Ont., Ottawa—APARTMENT—James R. Beach, 255 Metcalfe St., 11 story apartment, Nepean St. near Elgin St. $500,000.

Ont., Toronto—APARTMENT—Yolles & Rotenberg Ltd., 111 Richmond St. W., apartment, Avenue and Lonsdale Rds. Over $500,000.

▲ Que., Montreal—APARTMENT—Leicester Investment Corp., c/o Roland Dumais, 3995 Sherbrooke St. E., 11 story, bsmnt., penthouse 60x100 ft. apartment, Drummond St. near Pine St. $1,000,000.

INDUSTRIAL BUILDINGS

▲ Calif., San Leandro—PLANT—Poultry Producers of Central California, 840 Battery St., San Francisco, 185,000 sq. ft. egg processing plant. $1,000,000.

▲ Calif., Van Nuys—LABORATORY, etc.—Marquardt Aircraft Co., 16555 Saticoy St., constr. Ramjet testing laboratory, test engineering bldg. power plant addn., high altitude test cell $4,500,000.

▲ Conn., Bridgeport—POWER HOUSE—United Illuminating Co., 1115 Broad St., plans by Jackson & Moreland, 600 Park Sq. Bldg., Boston, Mass., power house addn. $8,000,000. CD 3/25/55.

▲ Conn., North Haven—PLANT—Pratt & Whitney Aircraft Div., United Aircraft Corp., 400 Main St., East Hartford, plans by Albert Kahn Associated Architects & Engineers, Inc., consult. engr.-archt., 345 New Center Bldg., Detroit, Mich., aircraft engine mfg. plant addn. $12,000,000.

▲ Conn., Wallingford—PLANT—American Cyanamid Co., S. Cherry St., plans by Pedersen & Gilney, 111 Whitney Ave., New Haven, chemical production plant. $1,500,000. Jaros, Baum & Bolles, 415 Lexington Ave., New York, N. Y., consult. engrs. CD 3/29.

Del., Smyrna—PLANT—Belber Trunk & Bag Co., Smyrna, plans by The Ballinger Co., 121 N. Broad St., Phila., Pa., mfg. plant expansion, $500,000.

▲ Ill., Chicago—MILL EXPANSION—United States Steel Corp., 71 Broadway, New York, N. Y. increase capacity of South Works at 83 and Lake Front Sts. by 500,000 tons, open hearths, rolling mill, slabbing mill, rolling wide flanged structural beams, sintering, $100,000,000.

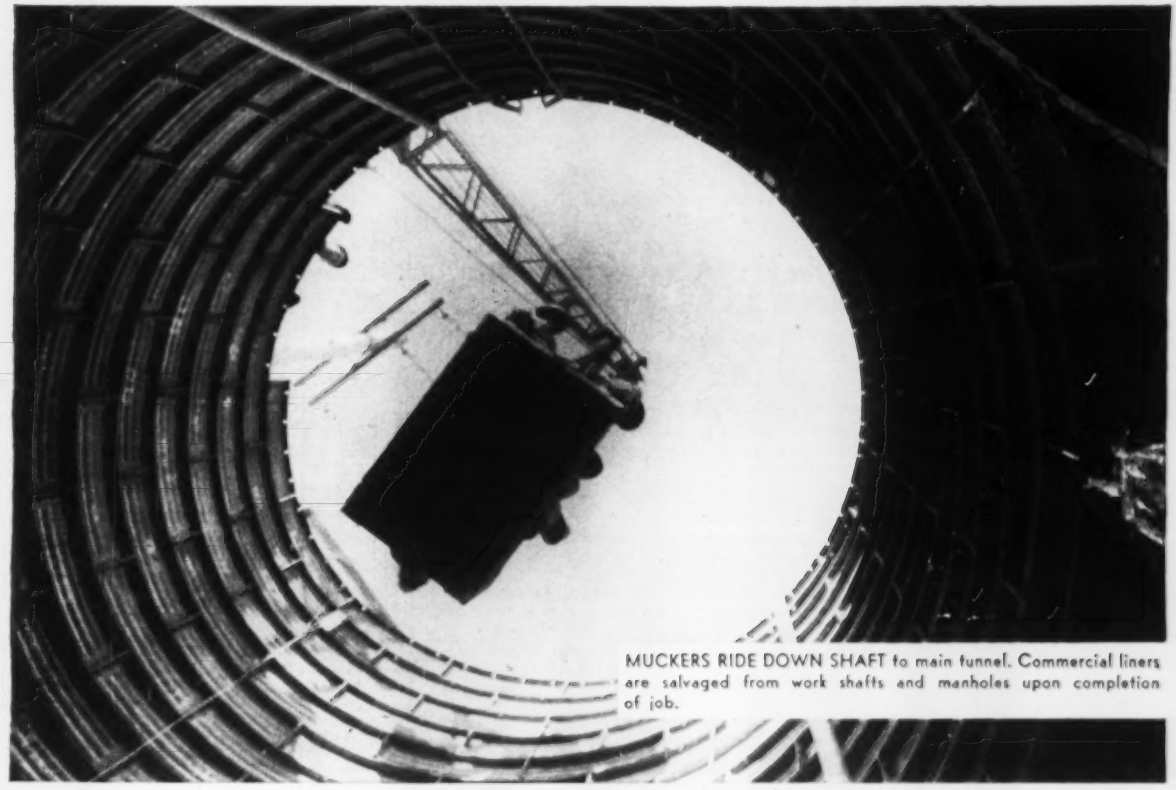
Ind., Fort Wayne—WAREHOUSE—Phelps Dodge Copper Products Co., New Haven Ave., 162x562 ft. and 60x300 ft. steel, concrete, masonry WAREHOUSE, $600,000. Irwin Borsuk, 630 John St., Plainfield, N. J., consult. engr.

▲ Ind., Gary—MILL EXPANSION—United States Steel Corp., 71 Broadway, New York, N. Y., 700,000 tons increasing capacity of Gary Mills, open hearths, slabbing mills, ingot rolling, sintering, raising capacity to 8,000,000 tons, $140,000,000. CD 12/6/51.

▲ Mich., Hersey—NUCLEAR REACTOR—Wolverine Electric Co-operative, John Keen, mgr., 103½ N. Michigan Ave., Big Rapids, nuclear reactor, Muskegan River, $4,900,000.

Mich., Muskegon Heights—PLANT—Bennett Pump Div. John Wood Co., Lethen Heights, Muskegon, 75,000 sq. ft. plant addn. $800,000. To go ahead in April.

(Continued on page 134)



MUCKERS RIDE DOWN SHAFT to main tunnel. Commercial liners are salvaged from work shafts and manholes upon completion of job.

Inside Bolting of Commercial Liner Plates and Ribs Speeds Sewer Tunnel to Early Completion . . .

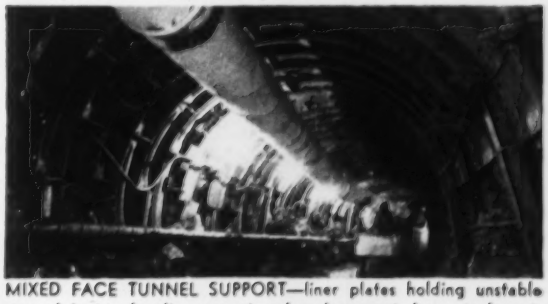
• A major factor in the speedy construction of the Central Schuylkill East Side Interceptor System of Philadelphia is the use of Commercial steel liner plates and posts.

Four thousand eight hundred feet long and averaging thirty-five feet below the surface, this tunnel passes under railway lines and heavy city traffic . . . demanding roof support of maximum strength.

To provide the needed strength, safety, ease of handling and simplified installation, Commercial Shearing steel liner plates and posts were installed. Bolted from inside the tunnel with only a "spud wrench," Commercial liner plates and posts could be installed faster than any other support, even by unskilled work crews . . . an important safety factor when working in unpredictable earth and rock formations.

Commercial steel liners bent to suitable radii for tunnels or shafts four feet or larger in diameter, are available in thicknesses 1/8″ to 3/8″. For complete details on how you can cut days off your tunnel completion schedule, write to Dept. E-14, The Commercial Shearing and Stamping Company, Youngstown, Ohio.

HEADING AND BENCH TUNNELING—removing hard bench, muckers move ahead. Commercial combination radii liner plates are in place in soft top heading.



MIXED FACE TUNNEL SUPPORT—liner plates holding unstable ground in top heading are pinned and supported on steel posts bearing on stable ground.

COMMERCIAL *shearing and stamping*

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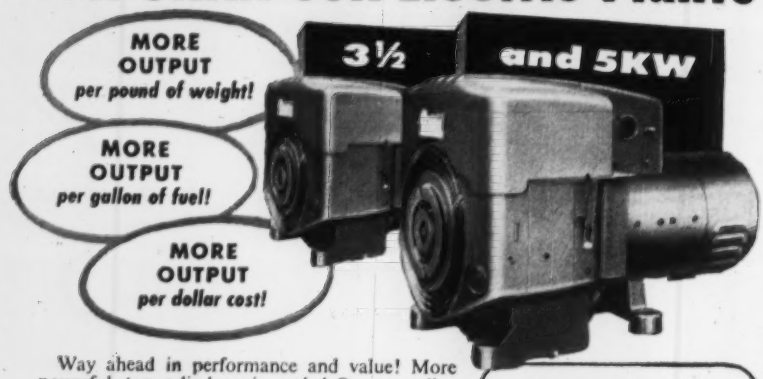
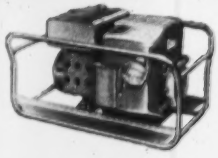
New ONAN CCK Electric Plants



Way ahead in performance and value! More powerful, two-cylinder, air cooled Onan gasoline engines of 4-cycle, horizontally-opposed design give smooth, quieter, effortless performance. Short stroke and moderate speed cut engine wear, give longer life. **Quality features** include rotating Stellite-faced exhaust **valves**, solid Stellite valve seat inserts, full **pressure** lubrication. Onan's exclusive Vacu-Flo **cooling system** available for difficult or "buried" **installations.**

Completely Onan-built, with Onan gasoline engines direct-connected to Onan all-climate generators in compact, rugged units. Available in stationary, portable and standby models with a wide range of accessories.



PORTABLE MODELS
Available with carrying frames or 2-wheel dollies. Easily portable. Other Onan portable models: 500 to 10,000 watts.

Write for folder on all CCK models

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guarantee perfect forming | the FOUNDATION of PERFECT BUILDING

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who say—
ROCFORM SYSTEMS are incomparable for speed and ease of handling with resultant economy

Rocform CORPORATION
15160 W. 8 MILE RD., DETROIT 35, MICH.
Concrete Forming Engineers

(Continued from page 132)

▲ **Mich., Plymouth**—PLANT—Burroughs Corp., John S. Coleman, pres., 6071 Second St., Detroit, plans by Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, 200,000 sq. ft. plant addn., Plymouth Division, $3,500,000. CD 3/9.

▲ **Minn., Rochester**—PLANT—International Business Machines Corp., 590 Madison Ave., New York 22, N. Y., plans by Eero Saarinen, W. Long Lake Rd., Bloomfield Hills, Mich., 400,000 sq. ft. plant and engineering bldgs., near Rte. 52, $8,000,000, Smith-Hinchman & Grylls, Inc., 800 Marquette Bldg., Detroit, Mich., consult. engr. CD 2/13.

▲ **N. J., Linden**—PLANT—General Aniline & Film Corp., Grasselli St., Linden, ethylene oxide and glycol plant, $8,000,000. Scientific Design Co., Inc., 2 Park Ave., New York, N. Y., engr.

▲ **N. Y., Tonawanda**—RESEARCH CENTER—National Gypsum Co., 325 Delaware Ave., Buffalo, 45,000 sq. ft. research center, 1690 Military Rd. $1,500,000.

▲ **N. Y., Tonawanda**—PLANT—Spaulding Fibre Co., 310 Wheeler St., plant addn. $2,000,000.

▲ **O., Toledo**—REFINERY—Standard Oil Co. of Ohio, Midland Bldg., Cleveland, refinery addns. $25,000,000-$35,000,000.

▲ **Tex., Houston**—PLANT, etc.—Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, O., doubling capacity of perchlorethlene plant, $6,000,000; plant expansion for producing ethylene dichloride, $750,000; warehousing, $200,000; laboratory unit, $125,000; constr. facilities for loading barges, $100,000, foregoing at Deer Park; increasing production of DDT at Green's Bayou Plant, $1,250,000, at Houston. CD 3/9.

Tex., Houston—PLANT—Gulf Printing Co., 3301 Buffalo Dr., plans by Wyatt C. Hedrick, archt.-consult. engr., 5201 Fannin St., 2 story, 75,000 sq. ft. masonry printing plant expansion. $550,000.

▲ **Tex., San Antonio**—PLANT—Hearst Consolidated Publications, Inc., 485 S. Spring St., Los Angeles, Calif., plans by B. Cocke, 3501 Broadway, newspaper production bldg., modernizing printing shop, etc. $1,500,000. W. E. Simpson Co., 945 Milam Bldg., Martin E. Staley, 31 Chandler Bldg., and Halsey & Royer, 120 W. Grayson St., consult. engrs. CD 12/5.

▲ **Ont., Peterborough**—PLANT—Outboard Marine & Manufacturing Co. of Canada Ltd., Monaghan Rd., plant extension. $2,000,000.

▲ **Que., Pont Rouge**—PLANT—Building Products Ltd., Pont Rouge, plant addn. $1,500,000. CD 3/8/45.

UNCLASSIFIED

Alabama—RURAL DISTRIBUTION LINES—Clarke-Washington Electric Membership Corp., Jackson, 59 mi. rural distr. lines, 399 mi. 44 kv transmission line, sys. imprvs., Clarke and Washington Counties. $820,000. CD 7/9/48.

Alabama—RURAL DISTRIBUTION LINES—Pea River Electric Co-operative, Ozark, 68 mi. rural distr. lines, sys. imprvs., Barbour Co., $585,000. CD 9/10/53.

▲ **Michigan**—GAS SERVICE—Michigan Consolidated Gas Co., 415 Clifford St., Detroit, Zone 26, expansion gas service, main constr., storage facilities, Ann Arbor, Washtenaw Co., $2,196,000; expansion gas service storage, distr. facilities, Big Rapids, Mecosta Co., $336,000; constr. gas mains, reconstr. old lines, build gas facilities, Detroit, Wayne Co., $15,400,000; expansion gas service, incl. mains, distr. storage facilites, Grand Rapids, Kent Co., $2,550,000; gas service expasion for distr., Greenville-Belding, Montcalm and Ionia Counties, $232,000; gas service expansion, incl. mains, Ludington, Mason Co., $170,000; gas mains, Mount Pleasant, Isabella Co., $141,000; gas service expansion, pipe lines, storage, Traverse City, Grand Traverse Co., $283,000.

▲ **Ohio**—RURAL DISTRIBUTION LINES—Licking Rural Electrication, Inc., Utica, 50 mi. rural distr. lines, 4 new sub-stations, sys. imprvs., Licking Co. $1,050,-000. CD 7/28/49.

▲ **Tex., Aransas Pass**—CAUSEWAY—Nueces Co. Road Dist. 4, Corpus Christi, causeway between Aransas Pass and Port Aransas. $1,000,000. Bond election soon.

▲ **Tex., Bryan**—RURAL DISTR. LINES—City, exten. of rural distr. lines into Brazos Co. $1,600,000. CD 3/3/53.

Tex., Port Arthur—BEACH, etc.—City, City Hall, plans by Les Braun of J. Earl Neff & Assocs., P. O. Box 1105, Beaumont, beach and recreational facilities proj., incl. swimming pool, bathhouse, pier, bridge extending 2,200 ft. into Lake Sabine, amusement park, boat docks, rock seawall, park area, etc. $500,-000.

▲ **Virginia**—TUNNEL—Elizabeth River Tunnel Comm., Berkeley Plaza, Norfolk, second tunnel from Norfolk to Portsmouth, 1.5 mi. down river from first tunnel, $20,-000,000. Deleuw Cather & Co., consult. engrs., 150 N. Wacker Dr., Chicago, Ill., submitted report that project is feasible and financially sound. Bids in about 8 months.

West Virginia—TELEPHONE CIRCUITS—Chesapeake & Potomac Co. of W. Va., 200 Woodlawn Ave., Beckley, addnl. long distance telephone circuits between Beckley and Hinton, Raleigh Co., $696,800. J. B. Goldsmith, 514 Lee St., Charleston, owner's engr.

▲ **British Columbia**—TUNNEL—B. C. Dpt. P. Wks., Victoria, tunnel south arm of Fraser River at Deas Island near B. C. and U. S. A. border, rectangular shape, 4 lanes, 2,200 ft. long, 60 ft. high, 1,000 ft. approaches, $16,500,000. Foundation of Canada Eng. Corp. Ltd., 789 W. Pender St., Vancouver, consult. engrs. CD 9/23/48.

▲ **Ontario**—PIPE LINE EXPANSION—Imperial Oil Ltd., F. C. Lantz, mgr., 56 Church St., Toronto, additional Waterdown to Toronto loop pipe line expansion, Sarnia, $1,750,000.

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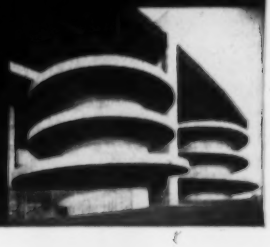

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 16 Connecticut
STREETS AND ROADS
April 16 Connecticut

HEAVY CONSTRUCTION—LB & CA

▲† **Robert A. Verrier Constr. Co.**, 65 Commercial St., Portland, Me. CA **$4,279,353**, est. $4,000,000. Special AAA Facilities, Limestone, Caswell, Caribou and Connor, ENG-19-016-56-83, MAINE. U. S. Eng., 150 Causeway St., Boston, Mass. CD 3/5, under LB.

▲† **The Arundel Corp.**, Pier 2, Pratt St., Baltimore, Md. CA **$1,117,225**, impvs. dredging in Portsmouth Harbor and Piscataqua River, CIVENG-19-016-56-95, 19.205 mi. Primary State Hy. No. 2, Easton to Cle Elum, FAP FI-002-2 (5).

▲ **NEW HAMPSHIRE**—State Dpt. P. Wks. & Hys., Concord,

N. H.—**Peter Salvucci & Son, Inc.**, 55 Pond St., Waltham, Mass., LB **$1,806,755** (5 bidders) 3¼ mi. 4-laned divided hy. and four bridges, F. E. Everett Tpke., Bow-Concord;

N. H.—**John D. Hartnett**, 56 Hanover St., Newbury, Mass., LB **$94,535** (4 bidders) asph. and peastone resurf. 33 mi. Proj. Y, Statewide. Bids Mar. 22. CD 3/14.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

C. **J. Maney Co.**, 173 Bedford St., Lexington, Mass. CA **$2,932,113**. Contr. No. 4, Northeast Expressway, Revere. CD 2/9, under LB.

▲ **J. F. Fitzgerald Constr. Co.**, 1600 Turnpike St., Canton, Mass. CA **$1,448,200**, est. $1,500,000. toll stations and utility bldgs. (4) on East-West Turnpike, various locations, MASSACHUSETTS. Massachusetts Turnpike Auth., 80 Boylston St., Boston, Mass. Howard, Needles, Tammen & Bergendoff, 80 Boylston St., Boston, Mass., engrs. CD 12/8.

▲† **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York, N. Y., LB **$3,762,201**, marginal wharf, Naval Construction Battalion Center, NDY 89974, Spec. 47524, DAVISVILLE, R. I. First Naval Dist., 495 Summer St., Boston, Mass. Bids Mar. 22. CD 3/19.

▲ **CONNECTICUT**—State Hy. Comm., State Office Bldg., Hartford,

Lane Constr. Co., 965 E. Main St., Meriden, Conn., CA, $10,949,942, Proj. 321-01, 6 conc. 59,300 lin. ft., incl. 15 grade separation structures on Conn. Turnpike, Guilford, Clinton, Madison and Westbrook, New Haven and Middlesex Counties. Bids Feb. 20, awarded Mar. 22. CD 2/23, under LB.

BUILDINGS—LB & CA

▲ **Harvey Constr. Co., Inc.**, Manchester, N. H., LB $1,066,785. JUNIOR HIGH SCHOOL, South and Cypress Sts., CONCORD, N. H. Concord Union School Dist., Concord, N. H. Bids Mar. 23. CD 3/15.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 10 Maryland — April 19 New York
STREETS AND ROADS
April 12 New Jersey — April 19 New York

▲† **N. Y., Syracuse**—ADDNL. FACILITIES—BA 4/17—U. S. Eng., 111 E. 16 St., New York, Zone 3, addnl. facilities Syracuse Air Force Station, ENG—30-075-56-145. $1,500,000-$2,000,000. Plans deposit $100. CD 3/20.

BUILDINGS—BA

▲ **Pa., Plymouth Meeting**—SCHOOL—BA 4/12—Plymouth-Whitemarsh Joint School Auth., Plymouth Meeting, Plymouth-Whitemarsh Joint High School, $1,665,000. Joseph F. Wigmore, 117 S. 7 St., Phila., archt. Lambert, McGee & Costello, Inc., 1629 Chestnut St., Phila., engr. CD 2/21.

▲ **Pa., Wilkes-Barre**—INSTITUTION—BA 5/2—General State Auth., 18 and Herr Sts., Harrisburg, institution for defective delinquents, incl. power plant, sewerage sys., water distr. $9,000,000. Plans deposit $100. Alfred Hopkins Associates, 292 Madison Ave., New York 17, N. Y., and Lacy, Atherton & Davis, Hotel Sterling, Wilkes-Barre, archts. A. F. Jones, c/o owner, ch. engr. CD 8/30/54.

BUILDINGS—SLC

▲ **Del., Newark**—PLANT—Albert Kahn Associated Architects & Engineers, Inc., archt., New Center Bldg., Detroit, Mich., soon lets contract mfg. plant addns. for Chrysler Corp., 341 Massachusetts Ave., Detroit, Mich., $4,000,000-$5,000,000. CD 1/18.

▲ **Pa., Reading**—SHOPPING CENTER—Food Fair Properties, Inc., 99 Park Ave., New York, N. Y., soon lets contract Shillington Shopping Center, $1,000,000. Lathrop Douglass, 518 5th Ave., New York, N. Y., archt.

HEAVY CONSTRUCTION—LB & CA

▲† **Tecon Corp.**, 1201 Main St., Dallas, Tex. LB $4,745,887, est. $3,614,600. (3 bidders) dredging 12 mi. St. Lawrence Seaway between Clayton and Alexander Bay, for St. Lawrence Seaway Development Corp., NEW YORK. U. S. Eng., Engineer Park, Niagara and Bridge Sts., Buffalo 7, N. Y. CD 1/25.

▲ **Mel Bros. Constr. Co., Inc., & Manco Constr. Co.**, 1209-61 St., Brooklyn 19, N. Y. LB **$2,117,443** (4 bidders) storm sewer in Gerritsen Ave., Bartlett Place, Lois Ave., Noel Ave., Just Court, Madoc Ave.; sanitary sewer in Gerritsen Ave., Abbey Court, Beacon Court, Canton Court, Dare Court, Eaton Court, Frank Court, Noel Ave., Gain Court, Hymen Court, Ivan Court, Just Court, Madoc Ave., Bartlett Place, Kay Court, Merit Court, Cyrus Ave., Keen Court, Seba Ave., Opal Court, Post Court, Lois Ave.; grading Cyrus, Lois and Noel Aves., Bartlett Place, Kay Court, Keen Court, Post Court, Abbey Court, Dare Court, Noel Ave., Ivan Court, BROOKLYN, N. Y. President Brooklyn Boro, Boro Hall, Brooklyn 1, N. Y. Bids Mar. 27. CD 3/20.

▲ **NEW JERSEY**—N. J. Hy. Auth., Boro Hall, 51 Monmouth St., Red Bank,

Reid Contg. Co., Inc., 23 Main St., Woodbridge, N. J., CA, **$2,529,198**, Contract 206, talternate using prestressed conc. beams) grading, paving, bridges for 4.25 mi. Garden State Parkway extension from Route 17 Paramus to Station 605 plus 00 in Washington Twp., Bergen Co. Bids Mar. 8, awarded Mar. 22. CD 3/14, under LB.

▲ **Sam Braen Constr. Co.**, 662 Goffle Hill Rd., Hawthorne, Calif., CA, **$1,700,000**, 2¼ m.g. tank on Lafayette Ave., Wyckoff and mains connecting RIDGEWOOD, N. J. Village, Village Hall, Ridgewood, N. J. John F. Muller, Village Hall, Ridgewood, N. J. village engr. Alfred Crew, 45 N. Broad St., Ridgewood, N. J., consult, engr. Awarded Mar. 20.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa. CA **$3,662,973**. Torresdale Filter Plant, filter equip., piping for Rapid Sand Filters Bid 2553, Contr. 138-W., PHILA., PA. City, Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Mar. 13. CD 2/3.

BUILDINGS—LB & CA

▲ **Bayside Country Club Homes**, c/o Oscar Silverstone, archt., 666 Fifth Ave., New York 19, N. Y. Owner Builds. **$20,000,000**. 600 HOUSES on 100 acre tract on Bayside Golf Course at 202 St. and 26 Ave., BAYSIDE, N. Y. 200 units to be built in 1956.

▲ **Juniper Park Homes**, c/o Alexander Fuller, 285 Central Ave., Lawrence, N. Y. Owner Builds. $1,400,-000. 32 HOUSES on tract between Broadway and Rockhall Rd., LAWRENCE, N. Y.

▲ **Cauldwell-Wingate Co.**, 101 Park Ave., New York 17, N. Y. CA Est. **$7,000,000**. Harte Haven SHOPPING CENTER, GARDEN APARTMENTS, HOTEL-MOTEL, 1-family houses, on 100 acre tract, MASSENA, N. Y. Harte Haven, Inc., c/o Wechsler & Schimmenti, archts., 52 W. 46 St., New York 19, N. Y., archts.

▲ **H. L. Fischer, Inc.**, 415 Lexington Ave., New York 17, N. Y. CA Est. **$1,000,000**. OFFICE, 268 W. Broadway, NEW YORK, N. Y. 195 Broadway Corp., 195 Broadway, New York, N. Y. CD 6/1.

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York 17, N. Y. CA Est. **$1,000,000**. BANK and OFFICE alterations, NEW YORK, N. Y. 15 Broad Street Corp., 11-23 Broad St., New York, N. Y. CD 3/21.

▲ **United Housing Foundation & Mutual Housing Service, Inc.**, c/o Herman J. Jessor, archt., 92 Liberty St., New York 6, N. Y. Separate Contracts. $4,000,000 three 12-story APARTMENTS, Sedgwick Ave., Cannon Place and Orloff Ave., NEW YORK, N. Y.

▲ **C. E. Youngdahl & Co., Inc., and Psaty & Fuhrman, Inc.**, 369 Lexington Ave., New York 17, N. Y. LB **$12,471,000** (6 bidders) general constr.; LB **$13,696,-000** (6 bidders) foundations and general constr.; B **$1,596,000** (6 bidders) foundations only, for Frederick Douglass HOUSES, Proj. No. NYS-64-1, located in area bounded generally by W. 104 St., Manhattan Ave., W. 100 St., and Amsterdam Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Mar. 23. CD 3/15.

Jarcho Bros., Inc., 38-18 33 St., Long Island City, N. Y. LB **$1,207,677** (4 bidders) heating and ventilating work; LB **$1,997,900** (6 bidders) plumbing work (NEW YORK, N. Y.);

Herman H. Schwartz, Inc., 179 S. Portland St., Brooklyn 17, N. Y. LB **$1,309,470** (6 bidders) electrical work (New York, N. Y.);

Otis Elevator Co., 20 11 Ave., New York, N. Y. LB **$673,573**, elevators (New York, N. Y.).

▲ **Christensen & Nielsen**, Liberty St., Schenectady, N. Y. LB **$2,400,000**. Linton High SCHOOL, SCHENECTADY, N. Y. City School Dist. of Schenectady, Schenectady, N. Y. Bids Mar. 14. CD 2/14.

▲ **Clearview Village Homes**, c/o Samuel Paul, archt., 89-51 164 St., Jamaica 3, N. Y. Owner Builds. $3,-000,000. 150 HOUSES on tract on Woodbury Rd., east of South Oyster Bay Rd., SYOSSET, N. Y.

▲ **Wilaka Constr. Co., Inc.**, 11 E. 44 St., New York 17, N. Y. LB **$5,248,000**. (4 bidders) general constr. 5 INFIRMARY BLDGS., KITCHEN BLDG., etc., Willowbrook State School, WILLOWBROOK, N. Y. Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Mar. 22. CD 3/16;

H. Sand & Co., Inc., 11 Park Place, New York 7, N. Y. LB $631,200. (3 bidders) heating work (Willowbrook, N. Y.).

▲ **Lionel Constr. Co., Inc.**, Att. Arthur Steinberg, 503 Market St., Camden, N. J., Separate Contracts. $3,-000,000. 200-unit RESIDENTIAL DEVELOPMENT, Eversham Rd. area, BLACKWOOD, N. J. Frank W. Hall, Haddon Heights, N. J., archt.

▲ **Surfside Homes, Inc.**, c/o B. Fishman, Smith Apartments, New Jersey Ave., Cape May, N. J., Separate Contracts, $3,200,000. 400-unit RESIDENTIAL DEVELOPMENT, Ohio Ave., etc., CAPE MAY, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲ **Daniel J. Cronin, Inc.**, 717 S. Orange Ave., Newark, N. J., CA, $1,300,000, CLASSROOM BLDG. NEWARK, N. J. Newark College of Engineering, 367 High St., Newark, N. J. Charles Wilson Ely, 744 Broad St., Newark, N. J., archt. Awarded Mar. 19. CD 11/8/54.

▲ **Moyer Bros.**, 2605 Beale Ave., Altoona, Pa. CA **$1,457,000**. brick, block steel HIGH SCHOOL, North St. Exten., MEADVILLE, PA. Meadville Area School Dist., Meadville, Pa. CD 3/12, under LB.

▲ **Fred Lundgren**, R. D. No. 5, Kittaning, Pa. CA **$1,297,000**. 1 story, brick, 94,000 sq. ft. JUNIOR SENIOR HIGH SCHOOL, NEW BETHLEHEM, PA. Red Bank Valley Joint School Dist., New Bethlehem, Pa. CD 12/13, under LB.

▲ **Potteiger Co., Inc.**, West Reading, Pa. CA **$1,207,101** general constr. HOSPITAL, READING, PA. St. Joseph's Hospital, 12 and Walnut Sts., Reading, Pa., awarded Mar. 19. CD 10/14/53;

Corbit's Inc., 225 S. Front St., Reading, Pa. CA **$603,374**, plumbing, heating and air conditioning work (Reading, Pa.).

▲ **Laurel Mills Farms, Inc.**, Att. Rae Crowthers, Warwick Rd., Stratford, N. J., Separate Contracts. $10,000,000. 805-unit RESIDENTIAL DEVELOPMENT, and sewage plant, STRATFORD, N. J. Lester H. Weckesser, Erlton, N. J., archt.

▲ **Princeton Associates Inc.**, 663 Main Ave., Passaic, N. J., Separate Contracts. **$4,140,000**. 207-unit RESIDENTIAL DEVELOPMENT, Darrah Lane, TRENTON, N. J. C. J. Kordys, 116 Passaic St., Passaic, N. J., archt.

▲ **Girsh-Moss, Inc.**, 1325 Walnut St., Phila., Pa. Separate Contracts. $7,000,000. RESIDENTIAL DEVELOPMENT, 500 units, SHOPPING CENTER, RECREATIONAL AREA, PHILA., PA.

▲ **O'Driscoll Constr. Corp.**, 1018 Vermont Ave., N. W., Wash., D. C. LB **$1,252,500**. (5 bidders) constr. STAFF HOUSING, LAUNDRY addn., SECURITY BLDG., and INFIRMARY BLDG., Children's Center, LAUREL, MD. D. C. Govt., Director of Bldgs. & Grounds, 499 Pa. Ave. N.W., Wash., D. C. Bids Mar. 23. CD 3/7.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 17 Florida
STREETS AND ROADS
April 18 Louisiana

▲† **Ky., Louisville**—RUNWAY, etc.—BA 4/24—U. S. Eng., P.O. Box 59, Louisville, Zone 1, exten. runway and taxiway, Standiford Field, ENG-15-029-56-78. $2,000,000. CD 8/19.

▲† **Tenn., Tullahoma**—GEOMETRY DIFFUSER, etc.—BA 5/22—U. S. Eng., Tullahoma, constr. variable geometry diffuser and scavenging scoop for supersonic circuit of the propulsion wind tunnel at Arnold Engineering Development Center, two units requiring 2,600,000 lb. steel. $4,000,000-$6,000,000. CD 11/16/54.

BUILDINGS—BA

▲ **Ky., Louisville**—HOSPITAL—BA 4/17—General Hospital, 323 E. Chestnut St., Stage 1, addns., alterations to general hospital, E. E. G. Bldg., emergency bldg. addn., electrical sewage bldg., addn. $4,000,000. Samuel Hannaford & Sons, Dixie Terminal Bldg., Cincinnati, O., archts. Joseph & Joseph, Speed Bldg., assoc. archts. E. R. Ronald & Assoc., 554 S. Third St., engrs. CD 2/8.

HEAVY CONSTRUCTION—LB & CA

▲† **Duval Eng. & Contr. Co.**, Box 1588, Jacksonville, Fla., LB **$1,581,306**, airfield pavement and bore sight range, Naval Air Station, Cecil Field, NOY 94248, Spec. 49793, JACKSONVILLE, FLA. P. Wks. Office, Sixth Naval Dist., Bldg. 12, Charleston, S. C. Bids Mar. 14. CD 2/28.

▲ **ALABAMA**—State Hy. Dpt., Montgomery,

Ala.—**Brown-Coble Constr. Co.**, Lexington, N. C., LB **$1,838,892**, Proposal A, c. conc. U.S. 31, 5.639 mi. Jefferson Co.;

Ala.—**Alvin J. Hazlerig, Jr.**, Cleveland, Ala., LB **$85,236**, bit. 5.356 mi. Rock City-Sunny Home Rd., Marion Co.;

Ala.—**Burgreen Constr. Co.**, Athens, Ala., LB **$178,383**, bit. 9.401 mi. from Morgan Co. Line E. via Ruth and Eddy to Scant City, Marshall Co.;

Ala.—**S. A. Graham Co.**, Brundidge, Ala., LB **$127,510**, bit. 8.727 mi. from Enterprise to Goodman, Coffee Co.;

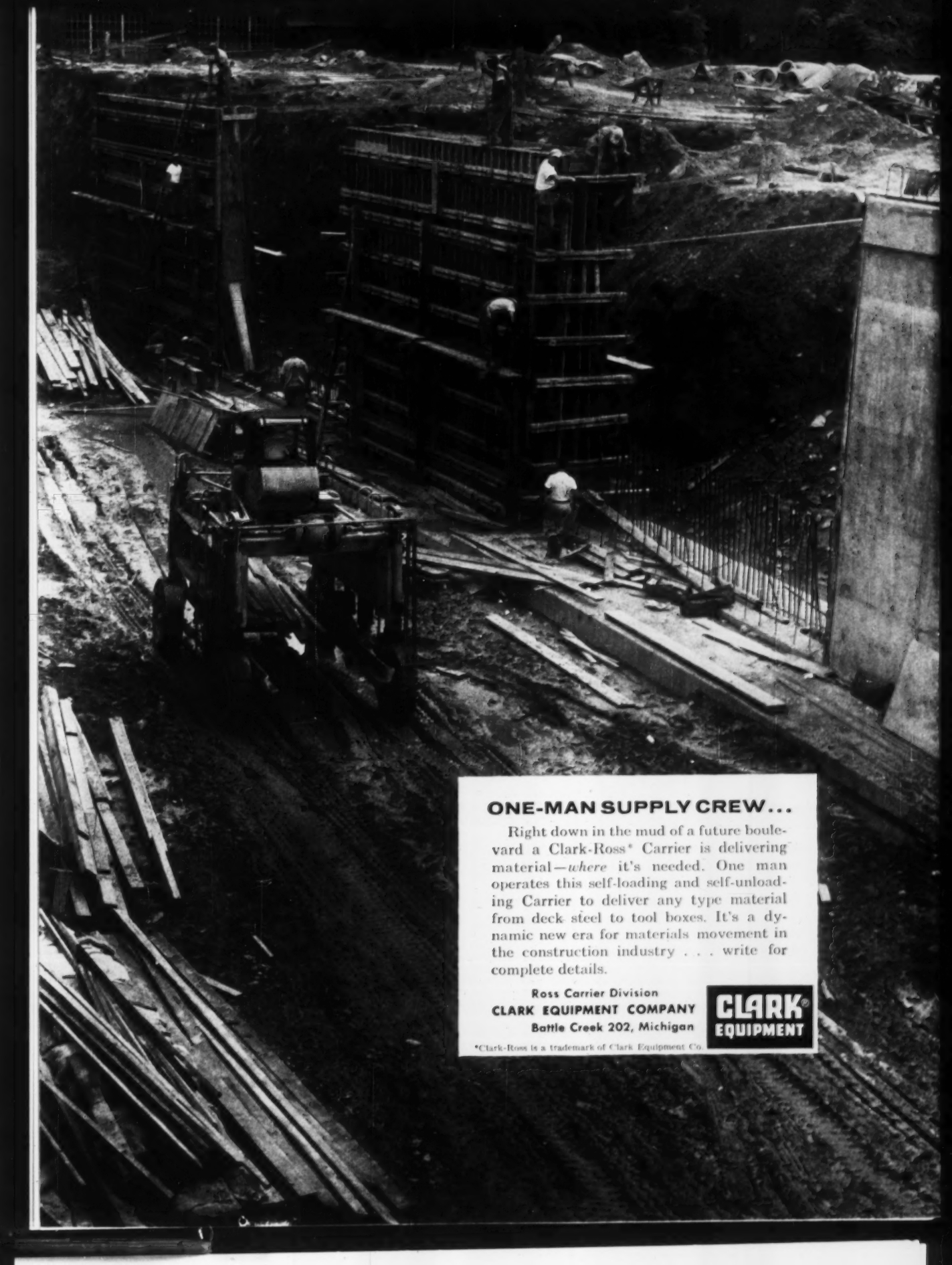
Ala.—**W. S. Newell Constr. Co.**, Hope Hull, Ala., LB **$98,699**, bit. 5.115 mi. part of rd. Hatchechobee N. to Huguley Rd., Russell Co.;

Ala.—**Walton Constr. Co., Inc.**, Moffatt Rd., Mobile, Ala., CA, **$197,324**, Proposals A and B, grading, drainage, bit., bridges 7.701 mi. Jeff Hamilton Rd., Mobile Co.;

Ala.—**A. E. Burgess Co.**, 3700 10 Ave. N., Birmingham, Ala., LB **$886,717**, grading, drainage 8.576 mi. from Ala. 7 at White House to Natural Bridge, Marion and Winston Counties;

Ala.—**J. R. Bryant Constr. Co.**, 121 Moulton St., Montgomery, Ala., LB **$308,803**, wid'n. 19.359 mi. U.S. 46 from Prichard towards Citronelle, Mobile Co.;

(Continued on page 138)



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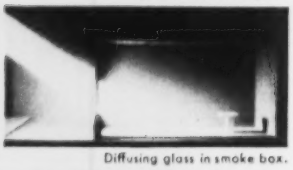
"Smoke box" photo—window glazed with clear glass.



Diffusing glass in smoke box.

Directional diffusing glass in smoke box.

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BINS—CHUTES—HOPPERS
MIXING TANKS—CONVEYORS

TIPPETT & WOOD
320 Worth St., Phillipsburg, N. J.

(Continued from page 136)

Ala.—cancelled bids to have been opened Mar. 16, base, bit. 6.616 mi. Ariton-Dillard Rd., Dale Co., CD 3/5.

BUILDINGS—LB & CA

▲ Algernon Blair, Inc., 1st. Natl. Bank Bldg., Montgomery, Ala., LB $2,625,982. low rent HOUSING, 314 units, 32 residential bldgs., 3 misc. bldgs., NORFOLK, VA. Norfolk Redevelopment & Housing Auth., National Bank of Commerce Bldg., Norfolk, Va. Bids Mar. 15. CD 3/2.

▲ L. F. Freeman, 1075 Carlisle Ave., Macon, Ga., LB $1,144,000. SCHOOLS, CUTHBERT, GA. State School Bldg. Auth., 41 Exchange Pl. S.E., Atlanta, Ga. Bids Mar. 15.

▲ Bear Bros. Constr. Co., Bell Bldg., Montgomery, Ala., CA, $1,639,600, COURT HOUSE, MONTGOMERY, ALA. Montgomery Co., Court House, Montgomery, Ala. Bids Mar. 15. CD 3/5.

▲ Bear Bros., Inc., 39 E. Jefferson St., Montgomery, Ala., CA, $1,200,000, SHOPPING CENTER, MONTGOMERY, ALA. James Flowers, Representing Owner, 158 Less St., Montgomery, Ala. Bids Mar. 1. CD 3/6.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 10 Wisconsin
STREETS AND ROADS
April 10 Wisconsin

BUILDINGS—BA

▲ Ill., Downers Grove—SCHOOL—BA 4/12—School Dist. 99, 936 Warren Ave., high school addn. $2,950,000. Holabird, Root & Burgee, 180 N. Wabash St., Chicago, Zone 1, archts. CD 4/27/55.

▲ O., Cincinnati—SHOPPING CENTER—BA 4/12—Walters Bros., 7911 Reading Rd., shopping center, Winton Rd. and Hemstead Dr. $2,000,000. CD 2/9.

▲ O., University Heights—STORE—BA About 5/25—May Co., Euclid Ave. at Ontario St., Cleveland, Zone 14 store, cedar and Warrensville Center Rd. $5,000,000. CD 11/29.

HEAVY CONSTRUCTION—LB & CA

▲ Ferro Concrete Constr. Co., 203 W. 3 St., Cincinnati, O., CA $3,483,480, Contr. 6, Millcreek Sewage Plant, CINCINNATI, O. City, City Hall, Cincinnati, O. Bids Mar. 13. CD 3/19 under LB.

▲ Merritt-Chapman & Scott Corp., Standard Bldg., Cleveland 13, O., LB $1,562,848, est: $1,000,000-$1,200,000 (3 bidders) Pier at W. 3 St., CLEVELAND, O. City, Dpt. Port Control, Wm. J. Rogers, dir., City Hall, Cleveland 14, O. CD 12/1.

▲ ILLINOIS—State Div. Hys., Springfield, O'Connor Constr. Co., 320 Reisch Bldg., Springfield, Ill., CA, $2,547,074, c. conc. 7.21 mi. U. S. 66 Will Co. Bids Jan. 27, awarded Mar. 22. CD 2/2, under LB.

▲ George Cassidy Co., 5225 W. Division St., Chicago, Ill., CA, $1,500,000, conversion of area formerly riding academy to broadcasting studio, CHICAGO, ILL. Columbia Broadcasting Co., 400 N. Michigan St., Chicago, Ill. Andrew Roberi, 150 N. Wacker Dr., Chicago 6, Ill., archt. Awarded Mar. 19.

BUILDINGS—LB & CA

▲ Jack Seyferth, Devils Back Bone Rd., Cincinnati, O. CA Est. $2,000,000. 300-unit MOTEL, swimming pool, lounge, etc., Reading Rd. and Chaucer Dr., CINCINNATI, O. Cincinnati Group headed by Anthony C. Elsaesser, c/o contractor, Carlos B. Schoeppl & Assocs., 2701 Biscayne Blvd., Miami, Fla., archts. Edward Niemeir, 3419 Stathem Ave., Cincinnati, O., engr.

▲ Lang Bros., 5240 Lester Rd., Cincinnati, O. Owner Builds. $1,850,000, 75 one story, bsmnt., brick HOMES, off Edwood Ave., CINCINNATI, O. Nunlist & Frolicher, Traction Bldg., Cincinnati, O., engrs. Awarded Mar. 24.

▲ Wilson Constr. & Development Co., 620 Franklin St., Edwardsville, Ill., Owner Builds, $5,000,000. 600-RESIDENCES in subdivision, Troy Rd. (Route No. 159), vicinity of Hadley St., EDWARDSVILLE, ILL. Edward A. Kane, 100½ N. Main St., Edwardsville, Ill., archt.

▲ James C. Simon, 8675 W. Pleasant Valley Rd., Parma 30, O. Own Forces. $4,000,000. 100 HOMES, Pleasant Valley Rd., PARMA, O. Andrew Burin, 22045 Lorain Rd., Fairview Park, O., archt.

▲ Jeffress-Dyer, Inc., 908 20 St. N. W., Wash., D. C. CA $2,723,203. Proj. No. 44-3, remodeling FOOD SERVICE BLDG., UNIVERSITY HOSPITAL, addns. with shafts and penthouses alterations to existing areas, ANN ARBOR, MICH. Regents of University of Michigan, W. K. Pierpont, vice pres., Plant Service Bldg., Ann Arbor, Mich. Bids Feb. 21. CD 1/19.

▲ Ward W. Ross, Inc., 1441 S. Telegraph Rd., Pontiac, Mich. LB $1,534,000. general constr. central, Crofoot, Emerson, Hawthorne, LeBaron, Malkin, McCarroll and Willis Elementary SCHOOLS; and addns. at Crofoot, LeBaron, and McCarroll Elementary SCHOOLS, PONTIAC, MICH. City, Lola R. King, secy. Bd. Educ., 40 Patterson St., Pontiac, Mich. Bids Mar. 6. CD 2/24.

(Continued on page 140)

DART SINCE 1903 . . . A PIONEER IN

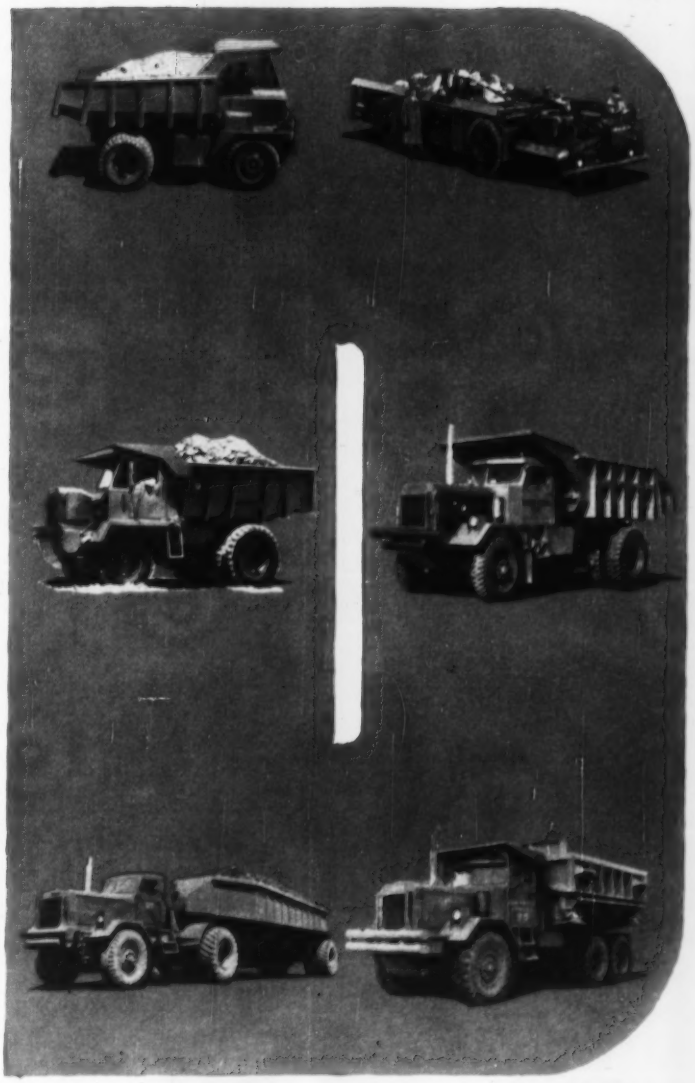
ENGINEERING and BUILDING OFF HIGHWAY TRUCKS

10 Ton to 55 Ton Capacity

MODEL 10-S — 10 ton end dump truck, powered by 150 H.P. Diesel Engine. 13,000# front axle with 17¼" x 3" air brakes. 26,000# full floating double reduction rear axle with 16½" x 7" air brakes. 12.00 x 20, 16 ply rock lug tires all around. Hydraulic steering. Approximate weight with body and hoist, 20,000#.

MODEL 20-S — 20 ton end dump truck powered by 225-275 H.P. Diesel Engine 20,000# front axle with 17¼ x 4" air brakes and 70,000# full floating planetary rear axle with 20 x 9" air brakes. 14.00 x 24, 20 ply rock lug tires front, 16.00 x 25, 24 ply rear. Hydraulic steering. 5 speed transmission or torque converter with 4 speed transmission. Approximate weight with body and hoist, 35,000#.

MODEL 50-S-BDT — 60 cubic yard bottom dump coal hauler. 300 H.P. Diesel Engine, Allison converter and 3 speed transmission, or optional Twin Disc converter and 4 speed transmission. Trailer axle, 85,000# capacity, 20 x 9" air brakes, hydraulic dump. Approximate weight, 68,000#.



MODEL 18-S-UG-S—18 ton underground truck powered by 200-300 H.P. Diesel Engine with torque converter and fully reversible transmission. Hydraulic motor operates steel apron conveyor. Equipped with exhaust scrubber. Hydraulic steering. Operates as shuttle car. Height, 60"; width, 11'-0"; length, 28'. Approximate weight, 43,300#.

MODEL 25-SL — 25 ton end dump truck, powered by 300 H.P. Diesel Engine. D-75-S rear axle, 100,000# capacity. FU900 front axle, 25,000# capacity. 20 x 9" air brakes. Torque converters optional. Hydraulic steering. 14.00 x 24 front tires, 18.00 x 25, rear tires. Approximate weight, 48,000# with body and hoist.

MODEL 35-T — 35 ton side or end dump truck, powered by 300-400 H.P. Diesel Engine, 25,000# front axle with 16.00 x 25 tires all around. 200,000 tandem full floating rear axle. Torque converters optional. Hydraulic steering. Approximate weight, 70,000# with body and hoist.

D-115

DART TONNAGE ENGINEERED TRUCKS

Kansas City 8, Missouri

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Pittsburgh 22, Penna.
National Distributors

(Continued from page 138)

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 18 Texas
STREETS AND ROADS
April 17, 18 Texas

▲ **Colo.**, Denver—BA 4/26—Bd. Water Comrs., City & County Bldg., furnishing, installing tunnel lining in unlined portions of existing Moffat Water Tunnel. $1,500,000. John Burggess, ch. engr. CD 1/9/48.

BUILDINGS—BA

▲ **Tex.**, Dallas—OFFICE—BA 4/16—L.M.S. Development Co., 918 Reserve Loan Life Bldg., 21 story, bsmnt. office, five electric elevators. $3,900,000. Plans deposit $50. Broad & Nelson, 918 Reserve Loan Life Bldg., archts. Zumwalt & Vintner, Merc. Sec. Bldg., and R. L. Rolfe, 2401-A Bryan St., engrs. CD 5/26/55.

▲ **Tex.**, Houston—CEMENT MFG. PLANT—BA 5/1—Ideal Cement Co., Denver National Building, Denver 2, Colo., addnl. unit of cement mfg. plant, Proj. No. 396. $1,000,000-$4,000,000. CD 3/1, under LB.

▲ **Tex.**, Fannett—PLANT—Bids Asked—Texas Gulf Sulphur Co., 2nd Natl. Bank Bldg., Houston, sulphur mining extraction plant. $7,500,000. CD 3/15.

HEAVY CONSTRUCTION—LB & CA

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**Austin Bridge Co.**, P.O. Box 1590, Dallas, Tex., LB $600,744, grading, structures, storm sewers, c. conc. 0.212 mi. Hy. US 77, Proj. UI 22 (9), Dallas Co.;

Tex.—**Austin Bridge Co & Worth Constr. Co.**, P.O. Box 1590, Dallas, Tex., LB $1,219,095, flexible base, c. conc. 0.268 mi. Hy. SH 550 and US 81, Proj. UI 473 (5), Tarrant Co.;

Tex.—**Austin Road Co.**, P.O. Box 1590, Dallas, Tex. LB $119,958, flexible base, one course surf. tr. 2.406 mi. Hy. FM 1908, Proj. R 1685-3-3, Harris Co.;

Tex.—**E. D. Baker**, P.O. Box 190, Borger, Tex., LB $129,512, grading, structures, base, surf. 8.828 mi. Hy. FM 2278, Proj. S 2116 (1), Cottle Co.;

Tex.—**W. R. Boyd, Inc.**, P.O. Box 408, Center, Tex. LB $185,954, flexible base, two course surf. tr. 2.353 mi. Hy. SH 21, Proj. F 198 (3), etc. Nacogdoches and San Augustine Counties;

Tex.—**B. G. Brown & Co., J. A. Pruit & T. M. Brown & Sons, Inc.**, P.O. Box 1919, Abilene, Tex., LB $156,133, grading, structures, base surf. 10.149 mi. Hy. FM 608, Proj. S 970 (3), Nolan Co.;

Tex.—**Bryan & Hoffman**, P.O. Box 390, Plainview, Tex. LB $274,707, grading, structures, base, surf. 21.933 mi., Hy. FM 1412, 2290 and US 60, Proj. S 2029 (1), Parmer Co.;

Tex.—**D. H. Buchanan Constr. Co.**, 1318 N. 5 St., Temple, Tex. LB $101,506, grading, structures, base surf. 5.494 mi., Hy. RM 2337, Proj. R 2209-1-1, Llano Co.;

Tex.—**John F. Buckner & Sons**, P.O. Box 76, Cleburne, Tex. LB $146,699, grading, structures, base, surf. 8.396 mi., Hy FM 2113, Proj. R 2060-1-1, McLennan Co.;

Tex.—**Cage Bros. & T. C. Cage**, 6959 San Pedro St., San Antonio, Tex. LB $1,165,005, grading, structures, grade separation, flexible base, two course surf. tr. 8.446 mi. Hy. US 75, Proj. F 98 (9), Collin Co.;

Tex.—**Harry Campbell**, Rte. 5, Box 68-A, Abilene, Tex. LB $136,069, grading, structures, base, surf. 7.276 mi. Hy. FM 2034, Proj. S 1970 (1), etc., Coke Co.;

Tex.—**Centex Paving Co.**; P.O. 9062, San Antonio, Tex. LB $208,952, grading, base, surf. 24.281 mi. Hy. FM 703, Proj. S 484 (2), Andrews Co.;

Tex.—**Collins Constr. Co. of Texas**, P. O. Box 1192, Austin, Tex. LB $102,969, hot mix b. conc. 17.057 mi. Hy. SH 31 and US 75, Proj. C 162-4-13, Navarro Co.;

Tex.—**E. B. Darby & Co., Inc.**, P.O. Box 467, Pharr, Tex. LB $220,503, asph. 22.359 mi. Hy. US 83, Proj. C 39-3-4-22-38, Hidalgo Co.;

Tex.—**Dew Constr. Co., Inc.**, P.O. Box 175, Tyler, Tex. LB $138,501, grading, structures, base, surf. 5.772 mi. Hy. FM 2324, Proj. R 2193-1-1, Rains Co.;

Tex.—**Gilvin-Terrill, Inc.**, P.O. Box 2268, Amarillo, Tex. LB $542,392, flexible base, hot mix b. conc. 18.539 mi. Hy. SH 152, Proj. C 455-2&3-11&6, Carson and Gray Counties;

Tex.—**Gulf Bitulithic Co.**; P. O. Box 2572, Houston, Tex. LB $117,856, hot mix b. conc. 9.976 mi. Hy. US 67, Dallas Co.;

Tex.—**Gulf Bitulithic Co. and F. M. Reeves & Sons of Austin**, P.O. Box 2572, Houston, Tex., LB $1,135,983, flexible base, b. conc. pavement and IGN overpass 5.982 mi. Hy. US 75, Proj. FI 519 (17), Harris and Montgomery Counties;

Tex.—**E. W. Hable & Sons**, P.O. Drawer 650, Corsicana, Tex. LB $157,752, grading, structures, base, surf. 4.06 mi. Hy. FM 1943, Proj. S 2093 (1), Tyler Co.;

Tex.—**Ned B. Hoffman**, 617 Fort Worth Club Bldg., Fort Worth; Tex. LB $89,305, seal coat 81.791 mi. Hy. SH 25, 24, etc., Proj. C 137-4-7, Archer, Clay, Montague, Throckmorton and Young Counties;

Tex.—**Luce Constr. Co. & C. C. Booth**, P.O. Box 1799, Vernon, Tex. LB $161,439, grading, structures, base, surf. 10.738 mi. Hy. FM 2247, Proj. S 50 (1), Comanche Co.;

Tex.—**Hugh McMillan**, P.O. Box 1227, El Paso, Tex. LB $250,311, hot mix b. conc. 4.064 mi. Hy. FM, 2233, Proj. C2121-1-2, El Paso Co.;

Tex.—**Holland Page**, P.O. Box 1181, Austin, Tex. LB $101,577, seal coat 113,598 mi. Hy. FM 155, 1117, 154, 710, 616, etc., Proj. C-211-9-8, etc., Fayette, Colorado, Gonzales, Jackson, Lavaca, DeWitt, Victoria and Calhoun Counties;

Tex.—**J. W. Perry**, 501 Insurance Bldg., San Antonio, Tex. LB $94,217, grading, structures, base, surf. 9.259 mi. Hy. FM 2270, Proj. S 2095 (1), etc., Bell and Milam Counties; LB $110,205, grading, structures, base, surf. 5.247 mi. Hy. FM 309, Proj. S 447 (2), Hill Co.;

Tex.—**Public Constr. Co.**, P.O. Box 380, Denton, Tex. LB $336,276, hot mix b. conc. 36.707 mi. Hy. SH 45 and 21, Proj. F 499 (2), etc., Houston Co.;

Tex.—**Reynolds & Huff**, P.O. Box 88, Tyler, Tex. LB $77,459, grading, structures, base, surf. 4.325 mi. Hy. FM 1878, Proj. S 2103 (1), Nacogdoches Co.;

Tex.—**Rodco Mechanical Constr. Co.**, Waco, Tex. LB $122,476, street illumination sys., 4.131 mi. Hy. US 81, Proj. C 15-14-16, Bell Co.;

Tex.—**C. Hunter Strain**, P.O. Drawer 1631, San Angelo, Tex. LB $153,156, hot mix b. conc. 20.193 mi. Hy. US 62 and 82, Proj. F 443 (25), Lubbock and Crosby Counties; LB $583,593, flexible base, two course surf. tr. 10.083 mi. Hy. US 290 and 277, Proj. F 135 (5), Sutton and Schleicher Counties;

Tex.—**H. B. Zachry**, P.O. Box 10188, San Antonio, Tex. LB $84,382, grading, structures, base, surf. 7.031 mi. Hy. FM 882 and FM 799, Proj. S 1283 (3), etc., Live Oak Co. Bids Mar. 21. CD 3/9, 2/24, 3/1.

▲ **TEXAS**—Texas Turnpike Auth., 214 First Federal Savings Bldg., Austin, Zone 1.

T. L. James & Co. and W. R. Aldrich, Ruston, La., LB $3,214,139, paving 10.221 mi. from approx. 0.5 mi. west of Ederville Rd. to approx. 1 mi. east of Watson School Rd., Contr. D-FW-47, Tarrant Co.. Bids Mar. 20. CD 3/2.

▲† **T. F. Scholes, Inc of Arkansas**, P. O. Box 112, Reading, Pa., LB $2,373,586, grading, drainage Cadet Academic area, parade and drill fields, etc. U. S. Air Force Academy, IFB-05-613-56-10, COLORADO SPRINGS, COLO. U. S. Govt., Dpt. Air Force, Pentagon Bldg., Wash., D. C. Bids Mar. 20. CD 3/1.

▲† **Rob. E. McKee General Contractor, Inc.**, Box 651, Albuquerque, N. M. CA $4,854,980. Special Test tract facilities, Holloman Air Force Base, ENG-29-005-56-73, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Mar. 16. CD 2/27.

BUILDINGS—LB & CA

▲ **Steenberg Constr. Co.**, 1371 Marshall Ave., St. Paul, Minn. CA $1,583,638, general constr. 3 story section, 1 and 2 story wings, 270x540 ft., T-shaped Highland Park High SCHOOL at Montreal and Snelling Aves., ST. PAUL, MINN. Bd. Educ., F. E. Conner, supt., L. E. Kinvig, city purch. agt., 253 City Hall, St. Paul, Minn. CD 3/7, under LB.

▲ **Ralph Allmon**, 1858 N. Estelle St., Wichita, Kan. Owner Builds. $3,500,000. 200 DWELLINGS, LIBERTY, MO.

▲ **B. L. McGee Constr. Co.**, Box 782, Austin, Tex. LB $1,788,000, est. $800,000. receiving and intensive TREATMENT BLDGS. for men and women for Austin State School, AUSTIN, TEX. Bd. for Texas Hospitals & Special Schools, 4405 Lamar Blvd., Austin, Tex. Bids Mar. 22. CD 2/16.

▲ **Tellepsen Constr. Co.**, Box 2536, Houston, Tex., CA $2,000,000. PLANT expansion, 2 new production lines, addnl. bldgs., utilities, LaPorte Rd., HOUSTON, TEX. Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, O. Bids Jan. 27. CD 1/18.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 18, 19 California

▲ **Ore.**, Portland—TERMINAL—BA 6/8—Port of Portland, Swan Island, Portland, terminal, Portland International Airport. $3,500,000. Burns, Bear, McNeil & Schneider, 2940 S.E. Belmont St., Apolts. CD 9/22/54.

HEAVY CONSTRUCTION—SLC

▲ **Washington**—GAS PIPE LINE—Washington Natural Gas Co., Gasco Bldg., Seattle, Zone 1, soon lets contract installing 25 mi. 20- to 44-in. welded steel pipe coated and wrapped, for supply lines from point near Renton to Georgetown pumping station and from point near Issquah to serve communities east of Lake Washington, over $1,000,000; installing 26 mi. 20- to 44-in. welded steel pipe, coated and wrapped, for supply lines from point near Alderwood Manor to North Seattle and Everett systems, over $1,000,000; 19 mi. 20- to 44-in. welded steel pipe line, coated and wrapped for supply line from point near Dieringer to Tacoma, over $1,000,000. CD 3/16.

BUILDINGS—SLC

▲ **Ariz.**, Tucson—MOTOR HOTEL—Sands Motor Hotel Corp., Freeway and W. Congress Sts., soon lets contract motor hotel. $1,250,000. Hausner & Macsai, 140 N. Dearborn St., Chicago, Ill., archts.

HEAVY CONSTRUCTION—LB & CA

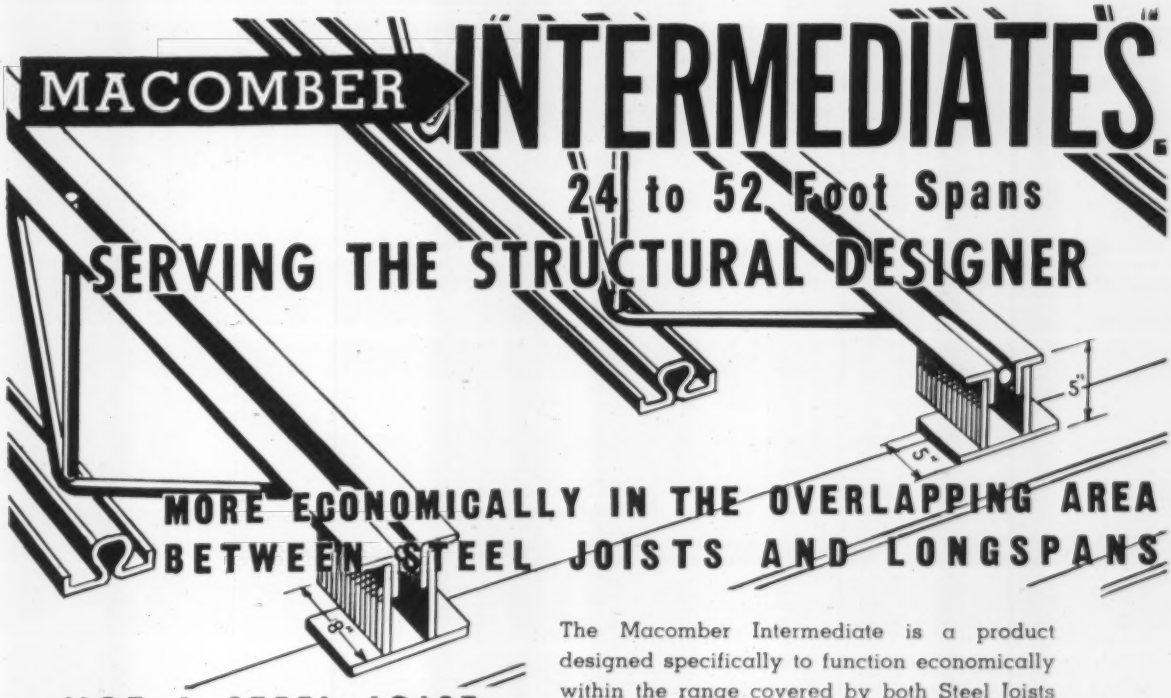
▲ **Scheuman & Johnson**, Lloyd Bldg., Seattle 1, Wash., CA, $1,239,619, 43,620 ft. concrete cylinder 36 and 24 in. pipe line from Renton to Factoria (first unit) to Mercer Island, SEATTLE, WASH. City, County-City Bldg., Seattle 4, Wash. Bids Mar. 7, awarded Mar. 21. CD 3/26, under LB.

(Continued on page 143)

MACOMBER INTERMEDIATES

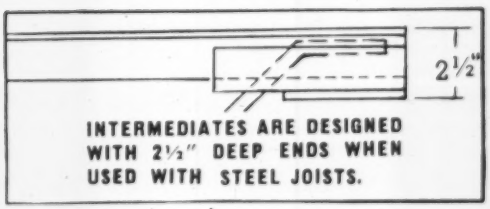
24 to 52 Foot Spans

SERVING THE STRUCTURAL DESIGNER



MORE ECONOMICALLY IN THE OVERLAPPING AREA BETWEEN STEEL JOISTS AND LONGSPANS

NOT A STEEL JOIST
NOT A LONGSPAN



INTERMEDIATES ARE DESIGNED WITH 2½" DEEP ENDS WHEN USED WITH STEEL JOISTS.

The Macomber Intermediate is a product designed specifically to function economically within the range covered by both Steel Joists and Longspans.

The greatest design efficiency of the Intermediate is apparent in the area of diminishing effectiveness for Steel Joists and Longspans.

In this overlapping area, you have a complete range of Intermediate sizes and spans for the efficient and economical framing of the majority of commercial and industrial layouts.

Keep this Macomber product in mind when you have an area within the 24 to 52 foot range.

Introduced in 1949—INTERMEDIATES had an immediate acceptance. Since then they have gone into every type of industrial and commercial structure from coast to coast.

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STANDARDIZED STEEL BUILDING PRODUCTS

MACOMBER INCORPORATED

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• ENGINEERING • FABRICATING AND ERECTING •

NAILABLE STEEL JOISTS
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LONGSPANS
•
BOWSTRING ROOF TRUSSES
•
METAL DECK
•
V-LOK STEEL FRAMING
•
STRUCTURALS

How to Lay Pipe Down a City Street

The street you see in this picture is in a Toledo suburb, in Lucas County, Ohio. The pipe is a 16-foot length of prestressed concrete cylinder pipe, one of 941 pieces that were laid down residential and business streets of this area. Two pieces of equipment were used, a backhoe to dig the trench and lay the pipe, and a front end loader to back-fill. This type of pipe installs quickly, even in below-freezing weather, because of the simplicity of the steel-and-rubber joint. Traffic was maintained during the entire job.

When a concrete line is laid through city streets, the manufacturer furnishes a supply of bevel adapters to permit the crew to make on-the-spot turns to clear obstructions. A bevel adapter is a small special made up of a bell ring and a spigot ring set back-to-back at an angle of 2° or 4°.

Concrete pipe is good for distribution and feeder lines like this one because of its strength. No concrete pipe has ever been known to shatter and flood a city street. For more information on how to lay concrete pipe, write Price Brothers Company, Dayton 1, Ohio.

Price

(Continued from page 140)

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles.
J. E. Haddock Ltd. & R. M. Price Co., 3538 E. Foothill Blvd., Pasadena, Calif., CA, $5,929,776, 16 bridges, grading, paving 6.5 mi. for final link of 6-lane Santa Ana Freeway between Coyote Creek and Ball Rd., Buena Park, Fullerton and Anaheim, Los Angeles and Orange Counties. Bids Mar. 8, awarded Mar. 23. CD 3/12, under LB.

BUILDINGS—LB & CA

▲ **Brown & Root, Inc.**, 4100 Clinton Dr., Houston, Tex., CA, $6,500,000, cement PLANT, DRAKE, ARIZ. Republic Cement Corp., 1084½ Gurley St., Prescott, Ariz. Awarded Mar. 17. CD 12/15.

▲ **Pierce Co.**, Court House, Tacoma, Wash., rejected bids Feb. 21, COUNTY-CITY BLDG. TACOMA, WASH. Est. $5,172,000. Will re-advertise. CD 2/27 and 2/29, under LB.

▲ **Williams & Burrow**, 500 Harbor Blvd., Belmont, Calif., CA, $1,663,940, 2 story, rein.-con., MUSIC BLDG., and 1 story AUDITORIUM, CLASSROOMS and OFFICE, BERKELEY, CALIF. Bd. Regents, University of California, Admin. Bld., Berkeley, Calif. Mar. 8, awarded Mar. 19. CD 3/14, under LB.

▲ **R. L. Dodge**, 2521 Cottle Ave., San Jose, Calif., Owner Builds, $2,000,000, 56-HOME SUBDIVISION, LOS GATOS, CALIF.

▲ **Permanente Cement Co.**, 1924 Broadway, Oakland, Calif., Separate Contracts, $12,000,000, CEMENT PLANT, Cushenbury, near LUCERNE VALLEY, CALIF. Kaiser Engineers, Inc., 1924 Broadway, Oakland, Calif., engr. CD 1/10, under Calif., Appley Valley; **Morrison-Knudsen Co.**, 319 Broadway, Boise, Idaho, CA site preparation. (Lucerne Valley, Calif.)

▲ **Del E. Webb Constr. Co.**, South 23 Ave., Phoenix, Ariz., CA, Est. $15,000,000, forest products PLANT, incl. lumber processing saw mill, drying mill, planing mill and moulded pulp plant, RED BLUFF, CALIF. Diamond Match Co., 122 E. 42 St., New York, N. Y. Southwestern Eng. Co., 4800 Santa Fe St., Vernon, Calif., engr.

▲ **G. T. Vistica**, 1372 Floyd Ave., Sunnyvale, Calif., Owner Builds, $2,000,000, (first unit) 64 HOMES, WILLOWS, CALIF.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **Atlas Constr. Co. Ltd.**, 4781 St. Catherine St. W., Montreal, Que., LB $2,649,200 (4 bidders). Filter Galley No. 5 new filter unit to have 50 m.g. daily capacity MONTREAL, QUE. City, City Hall, Montreal, Que. Bids Mar. 19. CD 2/15.

BUILDINGS—LB & CA

▲ **Fraser-Brace Eng. Co. (Canada) Ltd.**, 80 Richmond St. W., Toronto, Ont., CA, $8,000,000, aerylic staple fibre PLANT, MAITLAND, ONT. DuPont Co. of Canada Ltd., Maitland, Ont. CD 9/7.

▲ **Anglin-Norcross Ontario Ltd.**, 224 Davenport Rd., Toronto, Ont., CA, $5,530,000, 1 to 4 story, 318,000 sq. ft., 550x650 ft. structural steel, rein.-con. HOSPITAL, TORONTO, ONT. Workmen's Compensation Bd., 90 Harbour St., Toronto, Ont. Bids Mar. 1, awarded Mar. 21. CD 2/9.

▲ **Daymond Corp.**, 211 Lonsmount Dr., Toronto, Ont., Owner Builds, $1,232,000, 154-unit, 13 story masonry, steel, rein-con. APARTMENT, TORONTO, ONT. Alex Tobias Assoc. Ltd., 24 Cecil St., Toronto, Ont., engrs. E. I. Richmond, 455 Spadina Ave., Toronto, Ont., archt. CD 1/31.

▲ **Byers Constr. Co. Ltd.**, 5675 Western Ave., Montreal, Que., CA, $1,500,000, 3 story, 125x154 ft., concrete, glass block, structural tile PLANT, WATERLOO, ONT. Joseph E. Seagram & Sons Ltd., Caroline St., Waterloo, Ont. Jenkins & Wright, 233 Queen St. S., Kitchener, Ont., archts. Awarded Mar. 14. CD 3/18/46.

▲ **Foundation Co. of Canada Ltd.**, 1900 Sherbrooke St. W., Montreal, Que., CA, $13,000,000, ORE PLANT, CRUSHING PLANT, COBBING MILL, ORE SURGE BLDG., WET MILL-PELLETIZING PLANT, etc. at iron ore development, BRISTOL, QUE. Steel Co. of Canada Ltd., Wilcox St. and Pickands Mather & Co., Bristol, Que. Bids Feb. 24. CD 2/27.

▲ **Manhattan Development Corp.**, 282 Ontario St. W., Montreal, Que., Owner Builds, $3,000,000, 150 bungalows and split-level bungalows, HOUSING program, MONTREAL, QUE. Gabriel Jarry, 7271 Querbes Ave., Montreal, Ont., archt.

▲ **Byers Constr. Co. Ltd.**, 5675 Western Ave., Montreal, Que., CA, $1,500,000 (12 bidders) BUS GARAGE exten., MONTREAL, QUE. Montreal Transportation Comn., 159 Craig St. W., Montreal, Que. Bids Feb. 28, awarded Mar. 16. CD 2/15.

▲ **Richard & B. A. Ryan Ltd.**, 1705 William St., Montreal, Que., CA, $2,500,000 (3 bidders) 3 story OFFICE BLDG., ASSAY LABORATORY, COMMUNITY CENTER, 50 DWELLINGS, water mains and sewer lines, SCHEFFERVILLE, QUE. Iron Ore Co. of Canada Ltd., 810 Cote de Liesse Rd., Montreal, Que. Bids Mar. 2, awarded Mar. 15. CD 2/15.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Westinghouse Electric International Co.**, 40 Wall St., New York, N. Y. CA Est. $11,000,000, thermal steam POWER PLANT, OSAKA, JAPAN. Kansai Electric Co., Osaka, Japan. World Bank approved.

(Proposal Advertisements see p. 161 to 164)

No clutter or confusion at paving site. Premixed concrete delivered by Dumpcretes ready for placing.

PAVING ON THE OHIO TURNPIKE

Non-agitated Hauling Meets Every Test

On sections C-2 and C-3 of the Ohio Turnpike there's no clutter at the paving site. No paver, no water trucks, no men to run them.

Just spreaders and finishers, plus a Dumpcrete or two discharging 4 yards of premixed concrete in 60 seconds.

The automatic central mixing plant is midway on the 10-mile job. Three men run it. 14 Dumpcretes haul its 95,000 yd. production.

Here's the bonus. The single plant supplies concrete for bridges, culverts, walls and widening as well as paving.

"It's an efficient, high-production operation. We like it," says D. W. Winkelman, contractor.

This method cuts costs on small jobs, too. It's approved by 25 state highway departments. Write for bulletins today.

Central mixing plant located midway on job.

Slump, cylinder, beam and air test (above) all O.K.

Maxon Construction Co., Inc., Manufacturing Div. 6
2600 Far Hills Building, Dayton 9, Ohio

Send Me ☐ Paving on the Ohio Turnpike ☐ 8 Ways to Set Up For Central Mixing

Name_____
Firm_____
Street_____
City_____

MAXON DUMPCRETE

Fastest from plant to pour

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors
Contractors — Exporters
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STRUCTURAL STEEL
BUILDINGS & BRIDGES
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- MINERALS
- DAMS & BRIDGES
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We Look into the Earth

PENNSYLVANIA Drilling CO.

DRILLING CONTRACTORS AND MFRS.
PITTSBURGH 20, PA.

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- * Apr 12 — Iron and Steel Products; Pipe
- * Apr 19 — Wood Products, Glass, Explosives, Chemicals
- * Apr 26 — Clay Products, Lime, Plaster Paint, Roofing
- * May 3 — Wage Rates, Building Board, Lath, Insulation

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C.L. lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.* truckload del.* per block		CONCRETE Ready Mixed 1:2:4 ave. 50 c.y., del.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	
Atlanta	$4.12a	$3.71a	$3.61	$2.75	$2.75	$2.50‡	$2.14	$2.24	$1.45	$1.65	$0.18	$0.195	$13.25g
Baltimore	4.04a	3.63a	3.43	2.70‡a	2.70‡a	2.20‡a	2.75‡a	2.80‡a	1.95‡a	1.90‡a	18	18a	12.15
Birmingham	3.73	3.00e		2.53n	2.53n	2.13n	2.75	2.75	1.55	1.65	18	18	11.55
Boston	4.75b	4.29b	4.55	3.00a	3.00a	3.00a	1.65a	1.75a			23	265a	14.00k
Chicago	3.98a	3.57a	3.72	3.60‡b	3.60‡b	4.00‡b	3.75‡b	3.75‡b	2.25‡	2.25‡	23	23b	13.50
Cincinnati	4.20c	3.80c	3.89	2.19‡c	2.24‡c	2.24‡*	2.54‡c	2.54‡c			20b	25a	12.40
Cleveland	N.A. in C.L.	3.59		2.15ef	1.95f	1.75	4.10‡a	4.10‡a	3.35‡a	3.15‡*		23	15.45
Dallas	3.35a	2.95a	3.23	2.42	2.53	1.84	2.22	2.38			11e	267.5	11.25
Denver	4.50a	4.06a	4.50	1.85	2.00	1.20					23	255a	10.70
Detroit	4.05a	3.45a	3.70	4.25‡b	4.25‡b	4.00‡b	3.75‡	3.75‡	3.50‡	3.50‡	22	22a	14.20
Kansas City	4.20b	4.00b	4.00	1.65	1.65	2.00‡a	2.00‡a	2.00‡a			20a	22c	13.00b
Los Angeles	4.92eh	4.48eh	5.40	2.41‡a	2.76‡a	2.41‡a	2.41‡a	2.46‡a			145/m	255m	12.95ih
Minneapolis	4.39a	3.98a	3.89	2.70‡ag	2.70‡ag	1.60‡ag	3.25‡ag	3.25‡ag			19		13.35f
Montreal	3.11d	2.86d		1.95‡a	2.20‡a	2.25‡a	1.95‡a	2.20‡a			20	20a	10.80ek
New Orleans	3.85a	3.15a	3.48	2.44	2.44	2.00			1.45	1.65	27.5		13.65
New York	4.41a	4.00a	3.73	3.05hk	3.05hk	2.90hl	2.90hl	2.90hl					15.70ax
Philadelphia	3.88/4.27‡a	3.57/3.94‡a	3.49/4.12‡	2.85‡op	2.85‡op	2.35‡op	2.70‡	2.80‡	2.00	2.35	22/.28		13.20de
Pittsburgh	4.15a	3.76a	3.75	2.40‡	2.40‡	2.20‡	2.60‡	2.60‡	2.15	2.15	25d	31	14.00
St. Louis	3.85/4.16e	3.45/3.76e	3.70/4.01	3.25am	3.10am	2.40/3.10am	1.60j	1.70j			22	28c	13.25
San Francisco	3.98e	3.54e		2.02	2.02	2.12	2.17	2.17			24	28d	12.35c
Seattle	4.30a	3.75a		4.00‡bm	4.00‡bm	4.00‡bm	4.50‡bm	4.50‡bm			28	38	13.30y
Toronto	3.97	3.77	3.77	2.25	2.25	1.85	2.00	2.00	2.00	2.00	35	35c	14.15

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: *a Less 10¢ disc, 15 days. *b Less 2% disc, 15 days. *c Less 10¢ disc, 10 days. *d Truckload lots, deliv. 10¢ disc, 20 days. *e Truckload lots, destination price. *h LCL.

SAND, GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons or more. *e 1½". *f Pea gravel. *g Less 5% for cash. *h Less than 5 tons. *i Plus 5% mun. & prov. tax *j F.o.b. quarry. *k Barge lots add. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *o 1-3 mi zone. *p Add 10¢ for ea. add'l mi zone.

CONCRETE BLOCK: *a Cinder *b Waylite. *c Haydite. *d Celocrete *e 5⅛ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i Less 2% for cash *l F.o.b. plant San Rafael. *m F.o.b. yard.

READY MIXED CONCRETE: *a 5 cu. yds. or over del. Man. *b 25 cu. yds or more *c 10-100 cy. brackets. *d 1-3 mi. zone. *e 2,000 lb comp. *f 2,500 lb. comp. *g Less 25¢ disc, 15 days. *h Less 50¢ for cash. *i 8% off for cash. *j 2% off for cash. *k Federal tax included. Add 5% mun. & prov. *l 1:2½:3½. *m F.o.b. yard. *n Plus escalator clause. *o Add 15¢ for ea. add'l 3-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.05†	Buffington, Ind	$3.10†	Steelton, Minn	$3.20†	Muskegon, Mich	$3.15†	Toledo, O	$3.15†
Clinchfield, Ga	3.05†	Independence, Kan	2.95†	Leeds, Ala	3.00†	Saginaw, Mich	3.15†	Milwaukee, Wis	3.20†
Kingsport, Tenn	3.05†	Hannibal, Mo	3.10†	Duluth, Minn	3.20†	Wyandotte, Mich	3.15†	Green Bay, Wis	3.20†
West Des Moines, Iowa	3.10†	Northampton, Pa	3.05†	Hudson, N. Y	3.05†	Buffalo, N. Y	3.25†	Ironton, O	3.15†
Nazareth, Pa	3.05†	Universal, Pa	3.20†	Alpena, Mich	3.05†	Oswego, N. Y	3.30†	Montreal City	2.56†
Bath, Pa	3.05†	Waco, Tex. (+ 10¢ tax)	3.10†	Detroit, Mich	3.15†	Cleveland, O	3.20†	W. Winfield, Pa	3.20†

† *Prices to hold for Second quarter of 1956.*

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

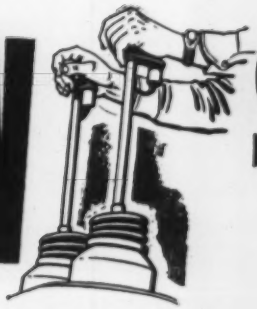
	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 80,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta				$27.60	$40.00	$0.115	$0.23	$0.114Pw	$0.276Pw	$0.15	$0.15	$0.25
Baltimore	150.00‡			21.50i		.092i	0.182i	.10wE	.195wE	.108	.105i	0.195i
Birmingham		62.00i										
Boston				22.00ap	35.00ap	22.00as	30.00as	.095aFw	.195*Fw	.095a	.095aG	.175aG
Chicago	158.00‡	85.00‡b	3.95/4.00‡j	21.85b	31.85b	20.85bs	30.85bs	.10wH	.18wH	.08b		
Cincinnati												
Cleveland		82.00d	5.15g	23.00A		23.00A		.1025AwF			.1025AG	.20AG
Dallas	e	40.00	e	24.45	43.19	.1030	.1858	28.91	50.44	.098	.1087	.1960
Denver		80.00										
Detroit		111.00		27.21		27.21s		.1188wI		.0988		.211
Kansas City	e	e	e	8.00cl		17.40s		.075*wJ		.065c	0.11	
Los Angeles	e		e	17.00dmx		17.00dxz		19.00dzK		18.00ds	.0875j	.1875j
Minneapolis			2.97k	25.00		25.00		0.11w		0.10	.1125	
Montreal	e	e	e	27.00n	39.60n	.135n	.198n	16.50nuE	20.90nuE	.132n	.197ns	.239ns
New Orleans				17.50e	o	17.50es	o	.085ew	o	.085B	.085BL	
New York			3.35f	23.80qCD	44.55qD	23.80qtCD	44.55tD	.1073wCDF	.1939wDF		.1073CD	.1968D
Philadelphia	175/185	110/120	4.06	22.00		22.00		.085wF		.095		
Pittsburgh	165.00	48.00	4.60	27.00	38.00	.10	.21	27.00E	40.00E	.098	.11	.224‡
St. Louis				18.75f		.1704		.0863fuM		0.1575	.10	
San Francisco		70.00e		20.00g	37.00g	20.00gks	37.00gks	21.00gN	38.50gN	19.75w	.09g	.18x
Seattle				23.50s	37.50h	18.25hs		25.50K		20.75hs	.09h	.10hx
Toronto			4.03	33.80	55.14	0.19	0.24	0.20w	0.25w	0.20	0.20	.24

h Delivered.

PAVING BRICK & BLOCK: *a CL. *b 3 x 4 x 8. *c 2½ x 8½ x 4. *d LCL, truck deliveries. *e Not used. *f 2" interior 6¢ treat. *g 3". *h 2" tr. 8¢ *i 3 x 3⅛ x 8½. *j 2½", 6 lb. tr.

ASPHALTS: *a Price at plant, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segunda. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 penetr. *l Less than 100 penetr. *m 40-80 penetr. *n Fed. tax included; add 5% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60-70 penetr. *q 40-85 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 85-200 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks. *y F.o.b. Oakland *z F.o.b. Edmonds *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *C Bulk. *D Prices based on transporting to Manhattan via truck. *E RC. *F Also RC. *G Also MS, SS. *H RC 0-5 incl. *I MC 4. *J MC, RC .0675. *K MC 3, 4 & 5. *L Ms. *M MC 1-5, RC 1-5, .089. *N MC 3. *P F.o.b. refinery Savannah: $0.09 gal., tank cars; $0.20 gal., drums.

NOW ONLY 2 LEVERS FOR ALL OPERATIONS



LORAIN Full-Metered "AIR-EASE" CONTROLS

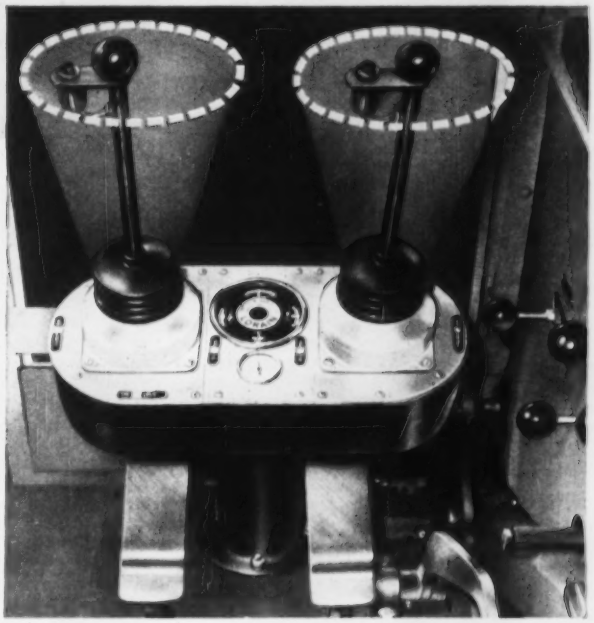
Reduce Operator Effort . . .
Provide Better Control

The latest Lorain advance brings a new era of operation to shovel-crane operators and owners. Now, Full-Metered "Air-Ease" operation controls all friction clutches. Now, two simplified hand levers replace the bank of awkward multiple levers of the past. These two levers put "Metered Air" to work feeding power to the clutches at any rate of flow desired. All of the old time "feel" and response is there, lever manipulation is simplified, effort is greatly reduced, speed is increased, control is more accurate. The range of air flow and power is at the precise command of the operator.

To the operator, here is a new day of operating ease and lack of fatigue. To the owner, no feature in years has added so greatly to production.

To be the first to put the new 2-lever "Air-Ease" control to work on your jobs, see your Thew-Lorain Distributor. Here is a feature your next shovel-crane should have!

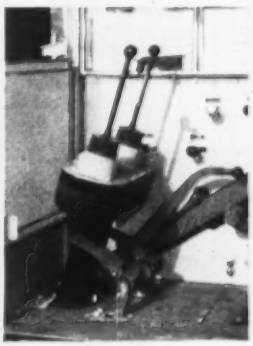
THE THEW SHOVEL CO., LORAIN, OHIO



LEFT LEVER — Yellow circle indicates the "wobble stick" action. By positioning lever in various directions within this circle, operator can swing the turntable right or left, or raise the boom up or down. Intermediate positions within the circle combine any of these operations.

RIGHT LEVER — In the very same rotating action, the operator can control these operations: (1) Main Hoist; (2) Secondary Hoist; (3) Clamshell Holding; (4) Drag or Hoe Drag-in; (5) Shovel Crowd-Retract; (6) Third Drum; (7) Power Load Lowering.

All operations described above are controlled by moving these levers forward or backward, from side to side for single operations, or "quartering" the levers for combined operations. Air booster operation of Hoist Brakes is available.



IMPROVED VISIBILITY

This view shows the clean, simple, 2-lever control arrangement in the operator's cab. Operator gets full view of work area, particularly on deep digging operations.

Intermittently used Full Air controls for crawler steering, turntable swing lock, tread-travel lock, shifting of travel-swing jaw clutches, are conveniently located on panel to right of operator.

The new 2-lever Full-Metered "Air-Ease" controls are now available on eight Lorain models, both crawler and rubber-tire mountings, in 20 to 30-ton range.

THEW LORAIN

FOR SAFE AND SPEEDY HOISTING

Heavy construction calls for heavy-duty blocks and MADESCO blocks combine the performance features developed through 30 years of specialized engineering for the construction field. Heavy steel shells and fittings, heavy iron or steel graphite-bronze, self lubricating sheaves are grooved to give you the maximum return for your rope investment. Sheaves equipped with bronze or anti-friction bearings for easy operation and long service. Our special service departments will help you with their recommendations. Write for our catalog or consult your equipment dealer who can supply you with MADESCO products.

MADESCO BLOCKS

MADESCO TACKLE BLOCK CO.
EASTON, PA.

Engineered to Serve
Your Special Service Needs

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You are invited to try

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—over $70 Million a Day!
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These reports name owners, engineers, architects. They give you job descriptions, dates, locations, cost estimates.

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Contractors: Let CONSTRUCTION DAILY help you keep a full job schedule, keep your equipment moving, and hold your trained crews together.

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Protect your profits with CD's advance warnings of material shortages, price increases, wage rates, etc., etc.

Manufacturers, too, depend on CD for help in increasing sales and lowering costs. Its advance news gives you prospects in plenty time to do your most effective selling job.

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330 W. 42nd St., New York 36, N. Y.

Please mail us sample copies of CD with complete information on how this construction market letter can help our business. No charge or obligation.

N1-5

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Los Angeles Bridge Costs Analyzed Two Ways

Costs per sq ft of bridge deck and per lin ft of wingwall are given here for the Los Angeles River Bridge in addition to the standard unit prices for both the bridge and the Vineland Ave. Overcrossing in Los Angeles, Calif.

This is a Hollywood Freeway project. The welded steel girder bridge and the reinforced concrete overpass were designed by the Bridge Department, California Department of Public Works. A. L. Elliot is bridge engineer and in charge of planning and G. T. McCoy is state highway engineer.

Oberg Brothers Construction Corp., Inglewood, Calif., took the contract on a low bid, 0.4% under the second bid and 12.1% under the engineer's estimate. The $910,694 contract includes $483,216 for bridge and overpass and $427,478 for roadwork. In preparing the estimate, the engineers assumed that the bridge costs would run about 10% higher than those for the overcrossing. The difference in the contract price, however, was only 0.3%.

In addition to bridge and roadwork the contract price covers the removal of a concrete channel and a bridge, excavation, the installation of sewer and drainage pipe and highway lighting.

The bridge is composed of two parallel structures of welded steel girders with reinforced concrete deck. Each side carries a 52-ft roadway and two 1.75-ft curbs. Reinforced concrete abutments with 155-ft wingwalls and spread footings support the single span of 137.3 ft. The design loading is H20 S16 44.

These contract costs for the bridge compare with the average prices of all nine bids:

Superstructure Items

	Unit	Quantity	Sq Ft Costs 1C	Avg
Conc, cl A	cy	435	$1 334	$1 473
Steel, reinf	lb	77,000	0 502	0 517
struct	lb	470,000	4 305	4 525
Str stl, clean & paint	ls	job	0 491	0 515
Sub Totals			$8,632	$7,030

Substructure Items

	Unit	Quantity		
Excav B, struct, dry	cy	1,580	$0 155	$0 208
Backfill, struct	cy	3,075	0 501	0 526
Conc, cl A	cy	1,055	3 235	3 573
Steel, reinf	lb	180,000	1 044	0 074
Piles furn	lf	1,160	0 208	0 253
drive	ea	40	0 300	0 238
Sub Totals			$5,443	$5,872

Other Bridge Items

Conc, cl A, curbs only	cy	45	$0 138	$0 153
Steel, reinf, curbs only	lb	2,700	0 018	0 018
Rail, steel, bridge	lf	736	0 384	0 377
Sub Totals			$0,540	$0,548
Total Sq Ft Costs of Bridge			$12,615	$13,450

Wingwall Items

	Unit	Quantity	Lin Ft Costs 1C	Avg
Excav B, struct, dry	cy	3,560	$34 44	$46 38
Backfill, struct	cy	6,325	102 00	106 90
Conc, cl A	cy	475	143 82	158 88
Steel, reinf	lb	51,300	33 09	34 06
Sub Totals			$313 35	$346 21
Contract Cost per Sq Ft of Wingwall Deck Area				$3 18
Total Contract Cost per Sq Ft of Deck Area				$15 78
Contract Costs, Bridge				$193,388
Wingwalls				48,569
Total				241,957

Specifications require that class A concrete contain six sacks of portland cement per cu yd, that it stand a working stress of 1,200 lbs per sq in and have an ultimate strength of 3,000 lbs per sq in. The owner furnishes paint for the steel work.

Minimum wage rates include $2.385 for skilled labor, $2.30 for semi-skilled and $2.00 for unskilled work. In order to complete the work during the allotted 200 days, additional work shifts are required throughout contract life.

The nine bidders include:

1C	Oberg Construction Corp., Inglewood, Calif	$910,694
2	W. F. Maxwell Co., Los Angeles, Calif	914,363
9	J. E. Haddock, Ltd., Pasadena, Calif	1,050,432
EE	California Bridge Department	1,035,400

Bids: 1-12-56 Item	Unit	Quantity	Unit Prices 1C	2
Portions of exist conc chnl, remov	ls	job	$6,000	$5,100
Exist bridge, remov	ls	job	10,000	8,000
Clear & grubb	ls	job	10,000	21,000
Wat Sup, dev & wat equip, furnish	ls	job	4,000	3,000
Water, apply	mgal	3,800	1 50	1 10
Ground, original, compact	sy	2,700	0 10	0 08
Roadway, excav	cy	8,500	0 60	0 62
Struct, excav	cy	16,170	1 50	2 50
backfill	cy	19,870	2 50	2 70
Ditch & chnl, excav	cy	33,000	0 50	0 52
Borrow, imported	cy	80,000	1 00	0 62
Base, untreated	t	1,500	2 50	2 30
Asph emuls, paint binder & sl coat	t	2	75 00	75 00
liquid, S.C.-2, prime coat	t	8	60 00	60 00
concrete	t	1,950	6 50	6 00
trans & ditch lining, pl	sy	250	2 00	0 75
Dikes, asph conc, pl	lf	1,900	0 40	0 35
Conc, cl A, struct	cy	3,450	47 00	46 00
bridges	cy	4,380	47 00	47 95
Waterstops, rubber	lf	148	2 00	2 00
Stl, bar reinf	lb	455,000	0 105	0 10
bridge	lb	775,000	0 10	0 11
Piling, conc, f	lf	11,410	2 75	3 20
Piles, drive	ea	277	115 00	100 00
Struct stl	lb	470,000	0 14	0 14
clean & paint	ls	job	7,500	10,000
Iron & stl, misc	lb	12,150	0 35	0 30
Conc, cl B, curb, gutt & side walk	cy	90	35 00	30 00
Survey monument	ea	1	25 00	40 00
Gd railing, met plate	lf	460	3 50	3 00
galv	lf	460	1 00	1 00
remov & reconstr	lf	80	2 00	1 50
Railing, stl	lf	1,578	8 00	7 50
Fence, chain link, 72"	lf	2,350	1 60	1 43
Gate, chain link, 12'	ea	1	100 00	200 00
RCP, 21"	lf	80	8 50	7 00
54"	lf	308	21 00	22 00
Pipe underdr, 8", remov & relay	ls	job	450 00	1,000
Sewer, CIP, 10"	lf	210	20 00	17 00
MH frame & cov, salv	ea	1	50 00	50 00
	ea	1	50 00	50 00
adjust to grade	ea	1	50 00	100 00
remodel	ea	1	200 00	500 00
Sewer junction chamber, remodel	ea	1	400 00	500 00
Roadway, finish	ls	job	1,000	1,000
Highway lighting	ls	job	11,000	12,700

Time to complete: 200 work days
Liquidated damages: $200.00 per day

Stockpiling, ditching, grading, any wheel tractor job...

NEW INTERNATIONAL 300 UTILITY TRACTOR

OUTWORKS THEM ALL!

Here's the Score!

Tops the field in pull and push-power! Delivers 4,379 pounds maximum pull at typical operating weight. 39.5 maximum drawbar hp.

10 speeds forward, 2 reverse with optional IH Torque Amplifier drive. Operator can change speed in any gear to boost pull-power up to 45% *On The Go!*

UNLIMITED hydraulic equipment control. Front and rear-mounted equipment controlled individually or *both at the same time*, using either single or double-acting cylinders—*or both*. Front and rear power drives available for equipment with built-in pumps.

Fast-Hitch. Just back the tractor—equipment coupling beams engage *automatically* on rear-mounted blades, scoops, and other Fast-Hitch equipment. Low-cost adapter available for 3-point equipment.

Power Steer. Optional. Takes work out of maneuvering in soft, rutted ground; reduces operator fatigue particularly on loader jobs.

Here's a new utility tractor that outperforms and outlasts anything you've seen up to now! It has up to 1,000 pounds more built-in weight to deliver traction where lighter weight utility tractors slip or stall. Big pneumatic tires turn this power and weight into effective traction equally well on paved factory aisles and yards, and on the soft footing of construction and other off-pavement work. *Ten forward speeds to 16.8 mph*, with exclusive Torque Amplifier drive, lets the operator select the best working speed for each specific job.

UTILITY IS THE NAME FOR IT!

For construction, industry, business, and endless county and municipal applications, the International 300 Utility is easily equipped with fork lift, materials loader, backfill and 'dozer blades, backhoe, grounds maintenance equipment, compressor, crane, hole digger, snow plow, street sweeper, dirt scoop, or any of many others. Your nearby International Industrial Power Distributor will be glad to demonstrate. Phone him today!

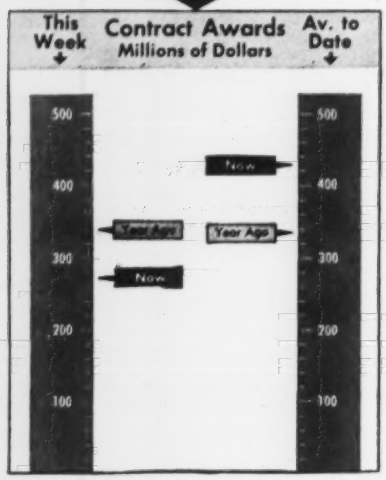
International Industrial Power

INTERNATIONAL HARVESTER COMPANY, 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors... Self-Propelled Scrapers and Bottom-Dumps... Tractor and Rubber-Tired Loaders... Diesel and Carbureted Engines... Farm Machinery... Motor Trucks.

Construction Scoreboard

Activity this Week



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 14 wks 1956	Chge %
	$ millions		
Federal	$11.7	$490.1	+9
State and Municipal	108.7	1,639.7	+29
Total Public	120.4	2,129.8	+23
Total Private	156.1	3,900.0	+31
U. S. Total	$276.5	$6,029.8	+28
By Type of Work			
Waterworks	$6.7	$79.7	+8
Sewerage	7.0	181.8	+75
Bridges	9.9	200.5	+59
Highways	51.3	598.3	+28
Earthwork, Waterways	7.8	186.3	+53
Buildings:			
Public, Excl. Hsg.	29.8	518.3	+14
Public Housing	1.0	104.1	+99
Private Housing	52.5	1,694.8	−7
Commercial	18.1	572.9	+36
Industrial	78.6	1,443.0	+154
Unclassified	13.6	450.1	−8
U. S. Total	$276.5	$6,029.8	+28

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

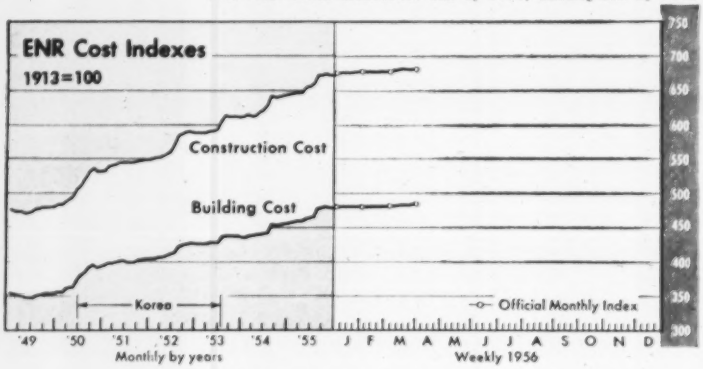
	Week of Mar. 29	Cum. 13 wks 1956	Chge '55-'56 %
	$ millions		
Corporate Securities	$97.8	$712.2	−7
State and Municipal:			
All Except Housing	62.0	1,197.4	+19
Housing	...	20.3	−44
Federal Loans	2.1	24.9	+13
Federal Aid	...	...	...
Total Nonfederal	$162.0	$1,954.8	+7
Federal Appropriations:			
In U. S.	$...	$34.4	...
Outside U. S.	...	...	...
Total New Capital	$162.0	$1,989.2	+9

Cost Indexes as of Now

ENR INDEXES (1913–100), 20 cities' average	1956 Mar. 29*	Percent Change from last Month	Year
Construction Cost	683.28	+0.5	+5.5
Building Cost	485.56	+0.5	+5.4

*Official Monthly Index for April '56

To convert above indexes to 1926=100: Divide Construction Cost by 2.080; Building Cost by 1.845.
1949=100: Divide Construction Cost by 4.770; Building Cost by 3.518.



WAGE RATES, 20-cities' average	1956 Mar. 29	Percent Change from last Month	Year
Common	$2.123	+0.3	+4.8
Skilled (average 3 trades)	3.318	+0.2	+4.0
Bricklayers	3.565	0	+3.1
Structural Ironworkers	3.312	+0.5	+4.4
Carpenters	3.077	+0.2	+4.6
Material Prices, 20-cities' average			
Structural Steel (average 3 mills), per cwt	$4.60	0	+8.2
Lumber, 2x4 Fir, per M fbm	122.583	+1.2	+5.0
Lumber, 2x4 Pine, per M fbm	104.200	+2.1	+6.9
Cement, bulk, per bbl	3.700	+0.4	+4.5
Sand, per ton	2.422	+0.2	+4.5
Ready-mixed concrete, per cu yd	13.188	+0.1	+6.5

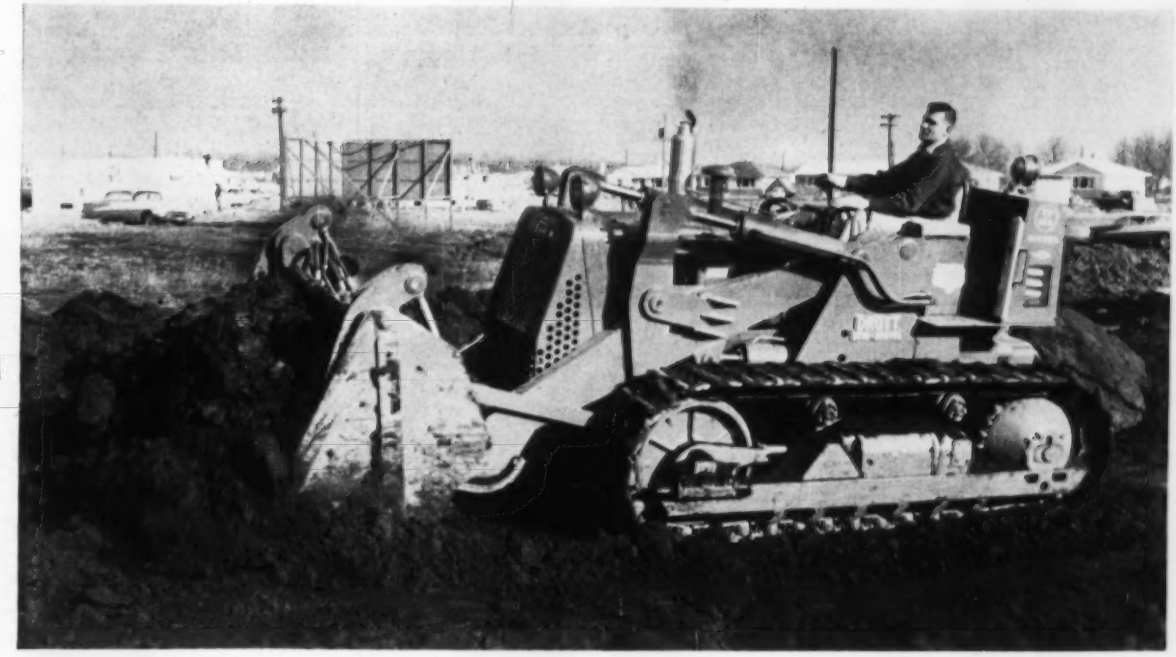
ENR INDEX REVIEW

	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
1955						
Apr.	647.49	135.74	460.62	130.94	609	176
May	653.26	137.01	462.55	131.65	731	211
June	655.96	137.51	464.82	132.13	633	183
July	660.09	138.38	467.52	132.90	699	202
Aug.	672.24	140.92	478.03	135.89	508	147
Sept.	672.74	141.03	479.15	136.20	576	166
Oct.	673.89	141.27	477.99	136.44	628	182
Nov.	673.20	141.13	479.30	136.25	561	162
Dec.	673.13	141.11	478.70	136.08	544	157
Annual Average	**659.72**	**138.31**	**468.80**	**133.33**	**600**	**173**
1956						
Jan.	676.36	141.79	480.48	136.58	645	186
Feb.	680.20	142.59	483.08	137.32	736	213
Mar.	680.20	142.59	483.14	137.34	786	227
Apr.	683.28	143.24	485.56	138.02		

MATERIALS SHORTAGES

- **Gypsum plaster board, lath, and sheathing:** Atlanta, Baltimore, Birmingham, Cleveland, Denver. Lath available in Minneapolis only on allocation. Sheathing allocated in Detroit.
- **Stainless steel building sheets, aluminum building sheets, and aluminum corrugated roofing:** Denver, Kansas City, New Orleans, San Francisco, Montreal. Detroit is short of stainless steel sheets. Detroit, Boston, and Toronto are short of aluminum building sheets.
- **Window glass:** Atlanta, Birmingham, Boston, Chicago, Cincinnati, Denver, Detroit, Kansas City, New Orleans, New York, Philadelphia, St. Louis, San Francisco, Seattle, Toronto.

For ENR cost indexes for preceding years see insert chart ENR Sept. 29, '55. Extra copies 50 cents.



It's Skid-Shovel, dozer, clamshell and "carry-type scraper," all in one

...It's the International Drott 4-In-1!

Skid-Shovel position gives you a speedy, straight-forward, depth-controlled bucket-fill. And to get "concrete-smashing" excavating force, just apply exclusive Drott *triple-power, pry-action breakout!* . . . Give the "machine selector" lever a finger-tip flick, for big-capacity dozing under hydraulic control . . . Another flick gives you a gravel-gulping clamshell, with a 30-inch dumping height advantage over ordinary "roll-forward" buckets! . . . Another lever-flick, and Bull-clam action is at your service—to heap-load the bucket like a carry-type scraper; to strip, grade, or spread with amazing accuracy, using clam lip control! And you *select* any Four-In-One machine action *on the go!*

It's the exclusive International Drott Four-In-One that arms you to beat a fleet of limited-duty rigs. Now available in 3 sizes, 1-yard to 2¼-yard capacity—all with the built-in protection of exclusive, shock-swallowing Hydro-Spring! Ask your International Drott Distributor for a Four-In-One *versatility unlimited* demonstration!

Ditch, grade, "dress shoulders" with Bullangledozer Attachment!

Remove bucket and attach this low-priced Bullangledozer—angle the blade to either side—then tilt the blade from the seat as desired with Drott's exclusive, roll-back action—and you've got a real ditching, sloping, or shoulder-dressing outfit. Or used as a straight dozer, this blade does heavy digging or fine grading under hydraulic "radius control." *Give it a try-out!*

International Harvester Company, Chicago 1, Illinois

INTERNATIONAL® DROTT

Gets back on new slab sooner — speeds paving schedules

KOEHRING 16-E *twinbatch*® paver on rubber tires is as mobile as your batch trucks. It works on or off-pavement — can get back on new slab in as little as 7 days to pave adjoining highway strips, scattered intersections, approaches to driveways and side roads. This time-saving "run-about" makes self-powered moves at 9 m.p.h. Yet, for all its mobility, the Koehring 16-E *twinbatch* is primarily a production paver — exceeds the output of large single-drum pavers on main highway work. For instance —

On straight-production paving, the Koehring 16-E hits a top output of 86.7 batches an hour (based on 60-second mixing cycle). This *reserve* production capacity with *twinbatch* Autocycle mixing offsets normal job delays — lets you pick up lost time which cannot be made up with a limited production single-drum paver.

Averages 50 cu. yds. an hour

As a result, the Koehring 16-E *twinbatch* easily maintains an average of over 76 batches an hour — 8 hours a day. Based on 16 cu. ft. per batch, plus the usual 10% overload, this assures you 50 cu. yds. of concrete per hour — with a small crew — on your main-highway paving jobs.

While its usefulness is unlimited as a general-purpose paver, this versatile Koehring 16-E also serves as a mobile concrete mix plant. On construction of curbs, gutters, culverts, bridges, pilings, it discharges into overhead hoppers, forms, chutes, or loads trucks. Elevating boom reaches up and out 60' — gives controlled discharge at 21-foot height (higher with special boom).

See for yourself how the big production capacity, overall versatility, and rubber-tired mobility of this Koehring 16-E *twinbatch* can put you miles ahead on your paving schedules. Get all the facts from your Koehring distributor, or write us for 16-E catalog. Big 34-E *twinbatch* is also available for major highway, airport paving.

KOEHRING Company
Milwaukee 16, Wisconsin

(Koehring Subsidiaries: JOHNSON • PARSONS • KWIK-MIX)

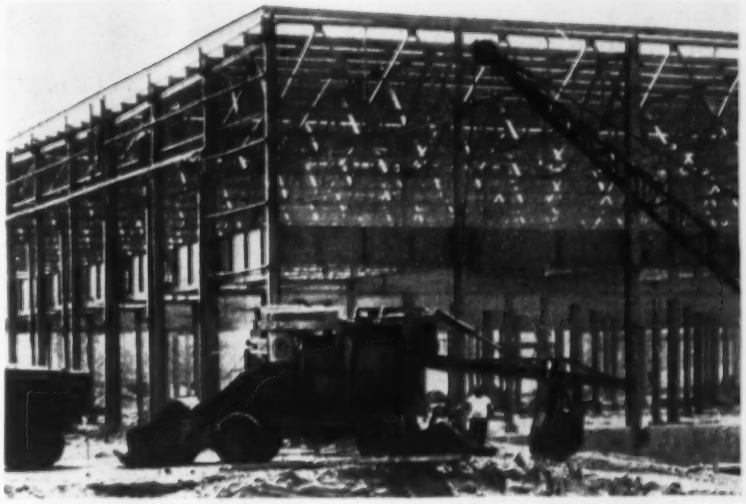
2537

Big rubber-tires are easy on the sub-grade

Notice how there's little or no scuffing on the sub-grade with a Koehring rubber-tired 16-E paver. When working between forms, flotation of the big 11:00 x 20 pneumatic tires protects the grade against surface damage — saves unnecessary filling and re-leveling. This rubber-tired advantage also lets the Koehring 16-E *twinbatch* work on pavement without planking to pour adjoining slabs, widen highway and airport strips, pave intersections, pour concrete for curbs, gutters, culverts.

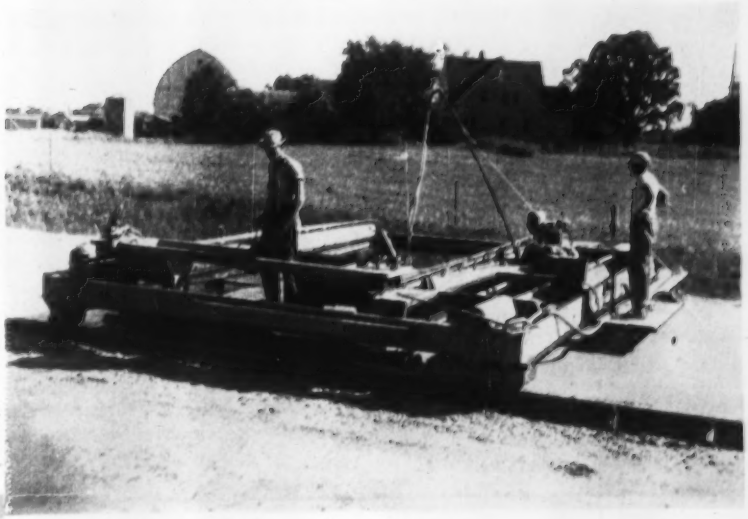
Mobile 16-E paver serves as a concrete mix plant

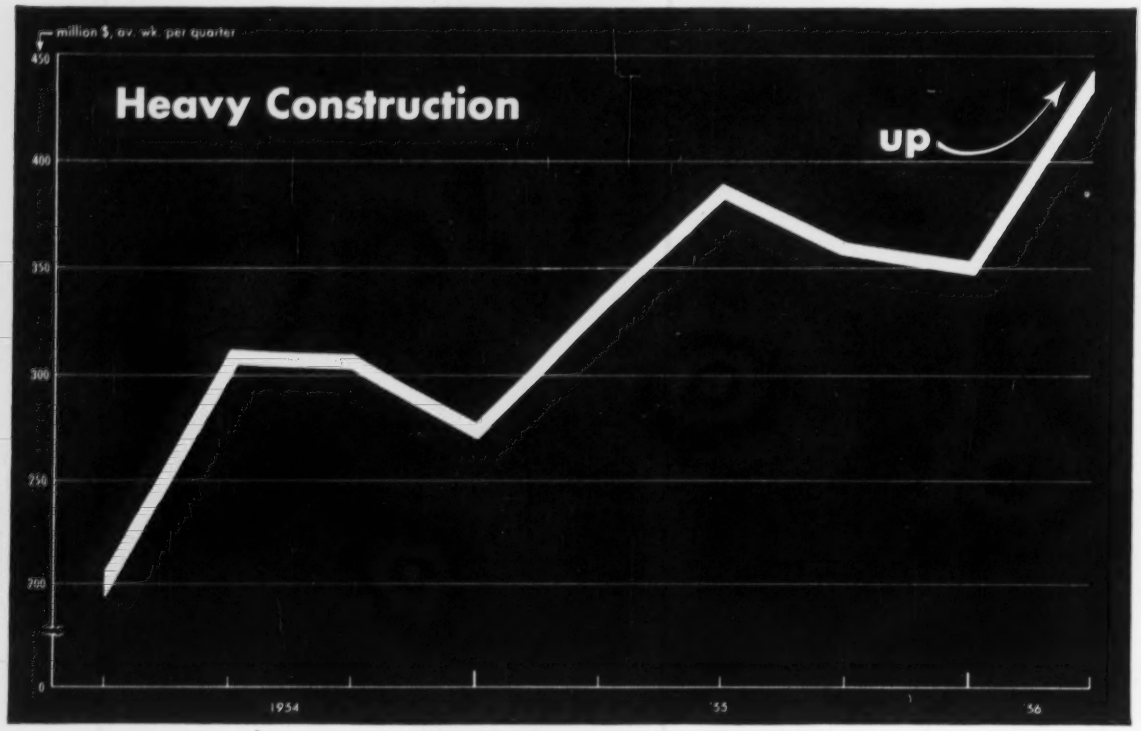
On building construction, versatile Koehring 16-E *twinbatch* pours footings, floors, columns — is never "grounded". Power-controlled boom swings in a 160° arc, or elevates 60° for overhead discharge — locks and holds in any position. Controlled-discharge bucket dumps anywhere along the 25-foot boom, can be opened or closed at any time for gradual discharge. Water-level capacity of bucket is 24 cu. ft. That's more than ample capacity to hold the full 16 cu. ft. batch of concrete, plus 10% overload.



Precision finisher keeps up with any paver

"Timely", precision-finishing is important on any paving job. Operating at almost twice the speed of a 34-E paver, Koehring Longitudinal Finisher handles all practical consistencies of concrete—harsh, wet or dry. It overcomes slump difficulties on grades and elevated curves. Produces mechanically accurate concrete slab surface, 8 to 30 feet wide, with uniform crown transitions.





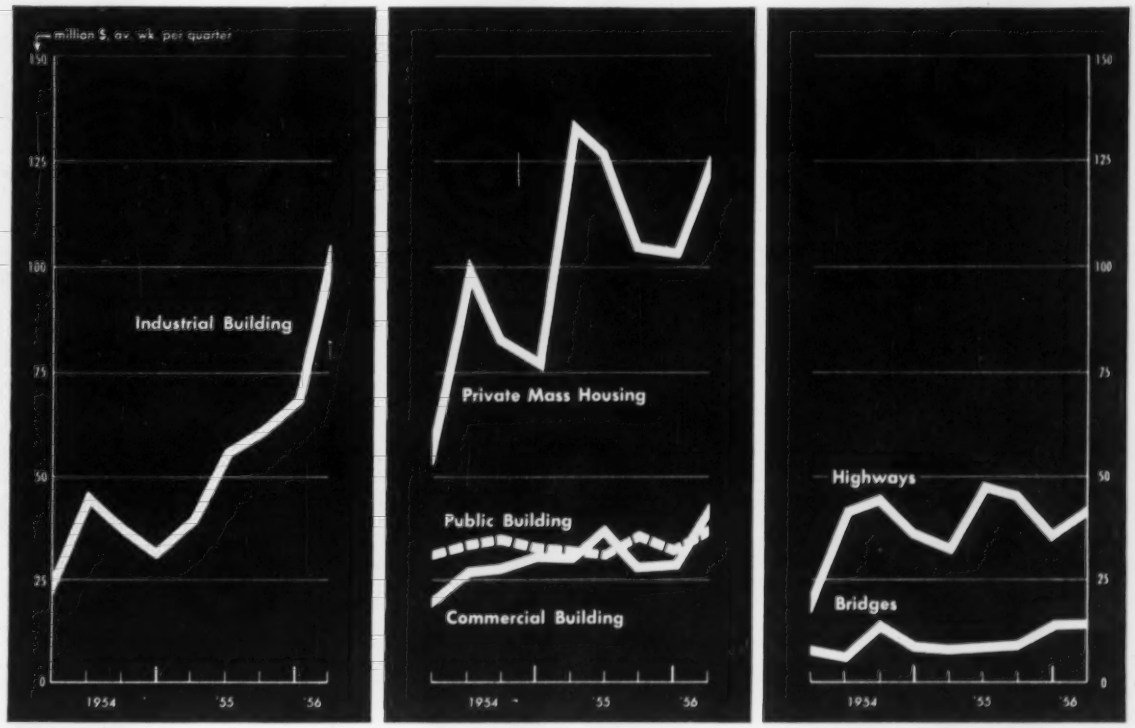
First Quarter Contract Awards Set All-

ENGINEERING CONSTRUCTION CONTRACTS—MARCH 1956

ENGINEERING NEWS-RECORD reports contineatal U. S. Construction projects at the followiag minimum costs—Waterworks, excavation, drainage and irrigation, $44,000; other public works, $73,000; tadustrial buildiags, $93,000; other buildiags, $344,000.

Five Weeks—Thousands of Dollars (000 Omitted)

	March, 1956							U. S. Cumulative Three Months		% Change	Canada March
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1956	1955	'55 to '56	1956
Public Works											
Waterworks	108	11,942	3,131	1,871	8,076	2,786	27,914	72,875	69,386	+5	1,145
Sewerage	2,337	9,045	2,442	8,577	8,995	6,631	38,027	174,765	95,271	+83	3,239
Bridges	20,356	4,093	8,095	7,996	8,263	8,827	57,630	144,848	113,501	+28	1,014
Earthwork and waterways	3,073	30,475	24,446	697	6,419	7,606	72,716	178,446	90,094	+98	15,810
Streets and roads	72,622	22,169	36,356	28,910	66,348	16,290	242,695	547,127	433,410	+26	4,009
Public buildings, residential	692	12,496	1,665	6,551	5,366	3,503	30,273	103,136	45,608	+126	9,175
Other public buildings	11,634	50,118	38,661	31,428	39,639	18,351	189,831	488,670	426,204	+15	9,287
Unclassified	8,945	11,738	12,329	6,728	34,779	12,359	86,878	299,506	273,344	+10	15,797
Total public	**119,767**	**152,076**	**127,125**	**92,758**	**177,885**	**76,353**	**745,964**	**2,009,373**	**1,546,818**	**+30**	**59,476**
Federal government (included in above classifications)	11,457	35,071	43,340	10,091	38,796	21,601	160,956	478,368	423,188	+13	27,551
Private											
Bridges						45,000	45,000	45,806	1,500	+2954	
Industrial buildings	17,684	332,007	24,733	168,316	80,194	105,284	728,218	1,364,427	518,336	+163	34,830
Mass housing	18,127	295,953	8,745	105,913	93,470	130,061	652,269	1,642,213	1,747,201	−6	25,201
Commercial buildings	7,486	43,537	14,722	26,289	48,716	23,494	164,244	554,840	402,671	+38	9,689
Unclassified	585	5,348	1,396	2,408	21,875	11,930	43,542	136,604	150,499	−9	51,500
Total private	**43,882**	**676,845**	**49,596**	**302,926**	**244,255**	**315,769**	**1,633,273**	**3,743,890**	**2,820,207**	**+33**	**121,220**
Total Engineering Construction:											
March, 1956—5 weeks	**163,649**	**828,921**	**176,721**	**395,684**	**422,140**	**392,122**	**2,379,237**				**179,696**
February, 1956—4 weeks	104,628	401,574	200,233	361,002	528,177	185,575	1,781,189				161,725
March, 1955—5 weeks	95,123	627,022	232,069	504,415	381,573	146,639	1,986,841				149,719
Three Months—1956	**368,483**	**1,879,816**	**520,569**	**984,031**	**1,295,832**	**704,532**		5,753,263		**+32**	**467,778**
Three Months—1955	213,763	1,338,508	456,134	959,037	949,083	450,500			4,367,025		386,076
% Change '55 to '56	+72	+40	+14	+3	+37	+56					+21



• These charts show the best three months the construction industry has ever had, and how the work was divided

Time Record

A jet-propelled construction industry roared to a new record in the first quarter of 1956. Contract awards for heavy construction soared to nearly $5.8 billion, a stratospheric 32% over the same period in 1955.

=During the first quarter of this year, ENR reported the greatest volume of heavy construction contract awards for any three-month period on the books. The total topped even the third quarter of 1952 when three huge atomic energy plant awards tossed more than $2 billion into the totals.

The incredible gains do not reflect any sudden surge in just one or two categories or classifications. This is a well-balanced boom. Well on their way to new records this year are highways, sewerage, earthwork-irrigation-drainage, and commercial building.

In fact, all major types of work—except waterworks and private mass housing—are running ahead of 1955—and by healthy margins.

Contract awards for highways in the first three months of 1956 climbed 26% ahead of last year as states, cities and counties raced to stay ahead of rapidly-mounting road deficiencies.

Bridge contracts, often closely related to highway awards, did better than expected with a gain of 66% over the first quarter of 1955.

Other big gains turned up in sewerage contracts (up 83% over the same period last year) and earthwork-irrigation-drainage, up 98%.

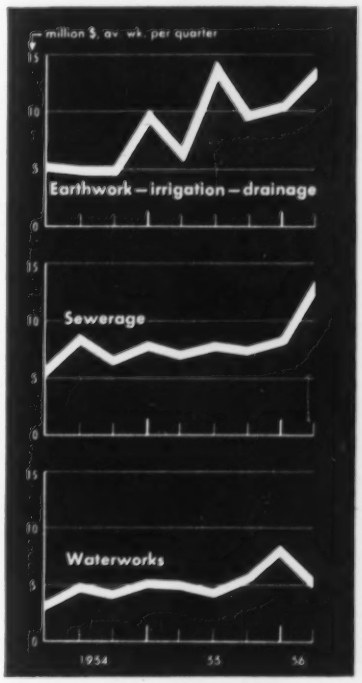
Building work is also booming, sparked by industrial building, which zoomed 163% ahead of 1955 during the first quarter, and commercial building, which registered a 38% increase.

A big gain in school construction is the key to a 15% increase in awards for public buildings other than housing.

Public housing is up sharply. The first quarter of 1956 leads the comparable '55 period by 126%.

The record-breaking volume of contracts so far this year is not only well-distributed as to type of work, but also on the basis of regions. Four areas stand out, however. The biggest gains over the first quarter of '55 are in New England, the Middle Atlantic and West of the Mississippi regions and the Far West.

(*B&F continued on page 154*)



Bond Freeze Thaws

Pennsylvania schools get aid after two-year halt

Pennsylvania's Gov George M Leader has signed a bill ending the more than two-year freeze on new school building construction under state-aid programs.

The measure boosts the former $425-million ceiling on such programs by $200 million immediately, and raises the ceiling another $100 million annually through 1959.

Under a 1951 state law, Pennsylvania school districts were assured of an average of 50% in state aid for new schools built by municipal authorities or the State Public School Building Authority.

This state aid was to be paid out over a period of 30 to 40 years to help school districts pay rentals to the authorities, which sell revenue bonds to finance the original construction.

The former ceiling of $425 million on the amount of such authority-financed school construction was set by the 1953 legislature. And, the ceiling was reached in December of that year. The result was a two-year bottleneck in this type of school construction.

Besides opening the door wide for a new round of school construction by raising the indebtedness ceiling, the legislation has two other provisions worth noting:

• All school construction will be eligible for state aid. In the past, such aid was given only to projects financed by the state or local authorities through revenue bonds. The effect is to permit wealthier school districts (which still have borrowing capacity) to obtain state aid for construction.

• Unit expenditures have been set to cut down "frills." Concerned because a legislative study group found that the state was financing the "frills" of one district in the same manner as the more economical needs of another, lawmakers set a limit on unit expenditures. Schools eligible for state aid can spend up to $1,100 per student for an elementary school, $1,700 per student for a secondary school. Costs above that figure won't be covered by state aid.

• Bond issue ignores segregation—Meanwhile, another significant development on the school financing front turned up in Florida, where the state's Supreme Court, in validating a school bond issue of $34.5 million for Dade County (Greater Miami), said the segregation issue had no place in the proceedings.

The bond issue had been challenged on the grounds that it would not have been approved by the voters if they had anticipated the U. S. Supreme Court decision barring segregated public schools.

Rejecting this argument in a unanimous decision, the court held that the 60,854 Dade County freeholders who voted for the bond issue (against only 5,228 negative votes) did so because of the "pressing necessity for better school facilities." The court went on to say:

"Any reasonable pattern for desegregation that may be approved in the future will still require more and better school facilities which can be taken care of when that contingency arises."

The $34.5-million bond issue will go for construction of both white and Negro schools.

• California studies permanent aid—A California legislative subcommittee came up with a plan that it hopes will meet the booming state's future school needs. The recommendations included creation of a single agency to administer a permanent program of state building aid to "needy" school districts.

The commission, which under the plan would be named by the governor, would fix maximum school building costs and would establish priorities for apportionment of state funds, in addition to setting general policy.

The group warned that even though California is currently granting state aid for school construction at a $5-million-a-month clip, school building isn't keeping pace with enrollment.

Ohio Bond Sale

$50-million highway issue goes to market April 25

The Ohio Sinking Fund Commission will offer a $50-million highway improvement bond issue for sale April 25. Proceeds of the bond sale will be used to help finance the state's highway construction program through next October.

The issue will be the third under the $500-million highway bond program approved by voters in 1953. The first issue, for $30 million, was sold in 1954. Another $52 million worth of bonds were sold last year.

The first maturity under the 1956 issue will be $1,520,000, due Sept 18, 1956. Thereafter, $1,515,000 worth of bonds will be retired every six months through October 1972. The bonds are amortized from revenues collected by the state through a special one-cent-a-gallon gasoline tax.

In taking the latest step to market $50 million worth of bonds, the state rescinded a March 12 amortization of $60 million in bonds to be issued during April, May or June. The trimmed-down version was adopted after Gov. Frank J. Lausche advised the commission that $50 million would cover highway construction needs from May through October.

Business Briefs . . .

• 100-million road bond issue—Kentucky voters will ballot Nov 6 on a proposed $100-million state bond issue for highway improvements. Proceeds of the bonds would be used to match federal funds. The governor also signed a bill that permits the Highway Department to decide which roads should be taken into the state road net for maintenance—and which ones should be maintained by counties.

• Paper industry expands—The pulp, paper and board industry expects to spend a record $1.5 billion to $1.8 billion on new plant and equipment within the next three years, according to a survey released by the American Paper and Pulp Association.

• Mortgage discounts spread—VA-insured mortgages are being discounted in most sections of the nation, the VA told a housing subcommittee of the Senate Banking Committee. It's another sign of the tight mortgage market. While VA mortgages are selling at par in some places (such as New York City, Hartford, and Providence), they are being discounted four to six points in other areas. Worst spot, said the VA, is Reno, Nev., where GI home loans are discounted nine points.

• Savings banks boost holdings—While the mortgage market continued tight, there was some hope in the February reports of the mutual savings banks. They reported a dollar deposit increase over the corresponding month in '55 for the first time in several months. And, they stepped up their mortgage holdings during February by $190 million. It was the biggest increase in the savings banks' mortgage portfolios for any February since 1947.

• Aluminum prices up—Alcoa, Kaiser and Reynolds, the big three of aluminum production, last week raised prices 1½ cents "across-the-board."

• Help for stainless steel—The government is releasing 18,000,000 pounds of nickel from its stockpile to go for civilian uses in the second quarter.

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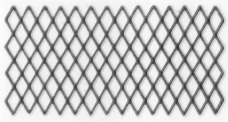

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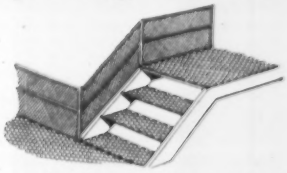

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Teamsters Give In

ILA loan is killed but conflicts still remain

Last week in Honolulu the teamsters kept the lid on the explosive issue posed by their alliance with the International Longshoremen's Association. They killed the controversial $400,000 loan to ILA, left James Hoffa's wings unclipped, avoided a showdown on internal conflicts—and perhaps merely postponed the day of reckoning with the AFL-CIO.

The union's executive board entrusted the ILA issue to its president, Dave Beck, who announced the ILA loan would be dropped and that he'd personally undertake the task of keeping his own house free of corruption. The ILA alliance remains otherwise intact and Hoffa's power within the union stays unfettered. It remains to be seen whether this solution will satisfy either AFL-CIO President Meany (see story below) or local affiliates now smarting under Hoffa interference. Beck is slated to discuss the matter with Meany later this month.

Before leaving Honolulu, Beck went out of his way to kill speculation that Hoffa may be elbowing him aside as the union's boss. He denied a rumor that he'd resign in favor of Hoffa if re-elected president in 1957 and said he had no intention of putting the brakes on him.

This week, a federal court in New York—where grand juries are already investigating waterfront corruption—opened its hearing on the fight over control of the teamsters' Joint Council. Incumbent president Martin Lacey has charged fraud and collusion in the election of Hoffa-backed John O'Rourke and in the formation of seven hastily charted teamster locals that Lacey says contributed to O'Rourke's victory.

Undaunted by the criticism it has received, the union rolls along in high gear. Beck has announced "full speed ahead" on the union's independent membership drive—to which most of the problems relate—with emphasis on the South and with possibilities of organizing offices in New York and Minneapolis. ILA's general organizer has reportedly assured the teamsters that the ILA will help by barring non-union truck and taxi drivers from the waterfront.

On the bargaining front, Hoffa told reporters that a 32-hour week is one of the teamsters' "prime targets." And to illustrate the success to which the union has become accustomed, he said that in 30 months in Tennessee, Alabama and Georgia the teamsters have managed to reduce a 60-hour work week to 40 hours and to push average hourly pay from 95 cents to $2.24.

In his home town of Detroit, the ascendant Hoffa was last week elected second vice president of the Detroit and Wayne County Federation of Labor. And in Arkansas—first of the states to conclude an AFL-CIO merger on the state level—the top post in the new federation went to Odell Smith, president and business agent of the teamsters' Local 878.

One Goal for Labor

Meany assails personal power in labor unions

AFL-CIO President George Meany last week condemned use of the trade union movement as a means to achieve personal and financial power and again asserted that the future of organized labor lies in the welfare of its members and of the nation as a whole.

Guest speaker at a luncheon meeting of the New York Building Congress, Meany deftly stepped around the ILA-Teamster alliance and said that trade unions have a "simple and single" purpose—to improve the living standards of the nation's workers. His assurance that the AFL-CIO, in pursuing its goal, would stick to the principles on which it was founded came on the heels of the teamsters' decision to make at least one concession in their courtship of the ILA (see story above).

Meany promised that the AFL-CIO, insofar as he can direct its policies, "is going to cooperate in every possible way" to see that those holding responsible positions in the trade union movement uphold the constitution of the new federation. There is, he said, no reason for great instruments of power, no reason for big treasuries and no room for personal power.

Noting the crucial stake which all of us have in the maintenance of our freedom and our dynamic economy as the principal roadblock to the spread of communism, Meany expressed labor's willingness to bear its share of responsibility. He stated that no one segment of our economy can progress at the expense of another and described labor's responsibility as one of the community as a whole. He said, labor, however, feels it should have "complete acceptance of the idea of the trade union movement."

Labor's concept of the key to its peaceful and constructive coexistence with management was similarly described on the following day by Walter Reuther, who was in New York prior to his departure for India. Reuther referred to it as management's acceptance of its "basic economic and moral responsibility at the bargaining table." Noting, however, that economic and social justice are not easily obtained, he warned that labor, in pursuing its goals, must rely more on its economic strength than on the gentle art of persuasion.

NLRB Examiner Rules in Favor of ESA

National Labor Relations Board trial examiner Herman Marx has recommended that Local 3 of the operating engineers and the Northern and Central California Chapters of AGC be ordered to void the subcontractor and union security clauses in their master agreement.

The case arose out of coercion charges against the union and AGC chapters by St. Maurice, Helmkamp & Musser, a Marysville, Calif., field engineering firm. It's another episode in the northern California jurisdictional battle between the operating engineers and Engineers and Scientists of America (ENR June 23, 1955, p. 80).

The subcontractor clause—substantially the same for the last 10 years—makes the master agreement applicable to subcontractors working for AGC members who are parties to the agreement. This means that a sub's employes would have to join the operating engineers, because the union security clause requires membership in the union for employes coming within the master agreement.

Musser—a member of Western Association of Engineers, Architects and Surveyors, which has an agreement with ESA (the NLRB certified representative)—went onto a construction project at Travis Air Force Base as a subcontractor for a joint venture of AGC members. The operating engineers, claiming violation of the subcontractor clause, called a strike and Musser's employes were withdrawn from the job for three months—reportedly at the request of AGC. The

(Continued on page 158)

W. "Slim" Ransdell, equipment engineer, Fredericksen & Kasler, contractors, Edwards Air Force Base, California

"Under severe desert conditions Guardol holds up..."

"We work our equipment hard 10 hours a day here at Edwards Air Force Base where our earthmoving equipment moved 2,400,000 yards in a recent six months' period, building taxiways and aprons capable of handling some of the world's heaviest and fastest aircraft.

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employes were reinstated after the NLRB stopped the strike.

Through the master agreement, said the trial examiner, the union and AGC have "established terms and conditions of employment for employes—who are not properly within the reach of the bargaining unit and whom the union has no lawful authority to represent." He noted that the natural tendency of the subcontractor clause is to coerce technical engineers into leaving ESA, a labor organization they have freely chosen to represent them, and to join the operating engineers, a union not of their choice. Such coercion, he concluded, is an unfair labor practice unlawfully interfering in the free exercise of the rights guaranteed by the Taft-Hartley Act.

The AGC—which can effectively prevent technical engineers employed by Western Association members from performing field survey work at more than 90% of the projects undertaken by general contractors in the 46-county area, if the practice is permitted—claimed the effect of the subcontractor clause was merely to make employes of subcontractors on jobs within the agreement a part of the bargaining unit covered by the agreement. But Marx said results of the NLRB election "preclude acceptance of the representation and unit claims of the AGC." He declared that AGC members had in effect agreed to award subcontracts for field survey work to Western Association members only if the subs agreed to violate the Taft-Hartley Act.

A spokesman for the operating engineers said Marx's recommendations, if upheld by the board, will not affect the union's membership drive. The drive was launched four years ago to organize field survey workers such as chief of party, instrumentmen, chainmen and rodmen.

The conflict runs deep—

Jurisdiction Over Industrial Work

Union efforts to solve the jurisdictional conflict between craft and industrial unions in the field of industrial maintenance and construction will be undertaken on April 23, when the 14-man joint committee of the AFL-CIO Building Trades and Industrial Union Departments holds its first meeting.

The Detroit strike at the Studebaker-Packard plant (ENR Feb. 16, p. 279) and subsequent events have demonstrated how rough is the road to a solution. The Studebaker dispute presented the first big test, but settlement was only a stop-gap compromise measure.

When the building trades met for their legislative conference last month, President Richard Gray assured the delegates that the Building Trades Department would "see to it" that construction work normally done under contract and now being performed by industrial union employes will be performed instead by members of the building and construction unions. "No force, no matter how high in the echelons of the newly-formed AFL-CIO federation," he said, "will deter us or in any way influence us from attaining this objective."

Meanwhile, when the Industrial Union Department held its first full executive board meeting, AFL-CIO President George Meany said one of its major tasks is finding a solution to jurisdictional problems, and suggested there is room for compromise on both sides. IUD President Walter Reuther, at the same time, characterized jurisdictional strikes as "anti-labor and anti-social and morally wrong."

At its board meeting, the IUD emphasized its interest in jurisdiction by refusing to fill its vacant vice presidencies from unions (such as the teamsters) that have refused to sign the AFL-CIO no-raiding agreement. The posts went to Peter Schoemann (plumbers), James Cross (bakers), Al Hayes (machinists) and Frank Rosenblum (clothing workers). Secretary of the joint committee handling the Building Trades-IUD conflict is Al Whitehouse, director of the pending AFL-CIO organization drive, the success—and even the start—of which is closely tied to the settlement of jurisdictional conflicts.

Joint committee members representing the Building Trades are Richard Gray and Frank Bonadio (department president and secretary-treasurer), Peter Schoemann (plumbers), Peter Fosco(laborers), William Maloney (operating engineers), James Hoffa (teamsters) and Finlay Allan (Detroit building trades). IUD members are Tony Gallo (cement workers), Eric Peterson (machinists), John Moran (communications workers), Desmond Walker (rubber workers), Al Hartnett (electrical workers), Elmer Maloy (steelworkers) and Richard Gosser (auto workers).

More Stable Costs?

Three-year contract offer turned down in Cleveland

Contractors' efforts to stabilize labor costs through longer-term contracts in the Cleveland, Ohio, area were stalled last week when the AFL-CIO building trades rejected an employer proposal for a three-year contract granting a total wage boost of 25 cents.

Contract negotiations are now under way between 17 crafts whose contracts expire May 1. The other nine of the area's 26 crafts last year signed two-year contracts providing for annual wage increases of 7½ cents each.

The 17 crafts now negotiating asked for a 25-cent boost for one year, or 25 cents annually for three years. Their current rates, including welfare fund payments, range from $2.65 for laborers to $3.47½ for bricklayers.

Under the employers' three-year proposal, the crafts would receive successive annual increases of 10, 7½ and 7½ cents. If the crafts win wage hikes in excess of 7½ cents, it is generally believed the nine crafts that settled last year will ask for renegotiation of 1956 rates, thus undermining the stability so far achieved.

The Cleveland demands for 25-cent wage boosts closely conform to those already made by six of the Detroit building trades, which are also seeking a substantial extension of fringe benefits. Current demands of Detroit carpenters, for example, reportedly include a 1956 wage boost of 25 cents plus 4% vacation pay, and a 1957 increase of 20 cents plus a 2% pension fund contribution; ironworkers are said to be seeking a 25-cent basic wage increase, 3% for pension fund, 5 cents more for vacation pay and six paid holidays—all for 1956. Other benefits being sought by some of the unions are said to include two hours show-up pay, equal work distribution, increased differentials for foremen and time off with pay for voting in general elections.

Minimum Rates on City Jobs Stall Construction Program

Successful union efforts to subject municipal construction work to minimum wages boomeranged last month in Omaha, Neb.

Nearly half the city's 1956 construction program—embracing more than $1.3 million in street and sewerage work—has been stalled as con-

(Continued on page 161)

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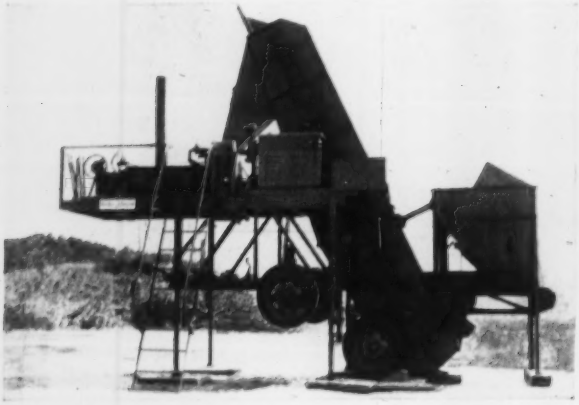

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tractors refuse to bid while the legality of the new minimum wages remains in question.

A law suit, started by eleven contractors to test the validity of the ordinance, is pending. Meanwhile, the building trades have asked the city council to repeal the ordinance in order to get construction underway. They'll request its reenactment next fall so the legal test can be made.

The controversial ordinance was proposed and backed by the building trades. It requires payment of minimum wages by contractors engaged in city work. The minimums range from $3.05 for asbestos workers to $3.22½ for stone masons.

Search for Peace

Joint committee in New Jersey launches program

Secretary of Labor James P. Mitchell has predicted that industrial peace—if achieved—will for the most part come through labor-management understanding and cooperation and not through legislative action or court decisions.

Speaking at the first meeting of New Jersey's newly-formed Joint Labor-Management Committee for the construction industry, Mitchell said that "management, particularly in this section of the country has grown up and accepted the fact that labor is here to stay. This is not true in all parts of the country."

This joint committee, five years in the making and composed of 44 members equally representing the New Jersey Building and Construction Trades Council and the Building Contractors Association of New Jersey, was formed early this year (ENR Jan. 12, p. 87). It seeks to promote harmonious labor relations and attract new industries to the state by assuring construction will be uninterrupted by labor disputes.

Mitchell, who said he believes "labor feels that the strike as a weapon does not assume the importance it once had," attributed national importance to the task undertaken in New Jersey.

In discussing the operating philosophy of the new committee, Secretary Paul Brienza, who is also managing director of the contractors' association, said that labor problems "are not to be solved by the domination of one group over the other. They should be mutually considered and their solutions arrived at by gathering knowledge and information, always using projected imagination and sound thinking, coupled with patience and initiative to do the right thing for the industry."

"We all realize," noted Sal Maso, president of the State Building and Construction Trades Council, that the committee "has no authority to make major decisions. However, we believe that after working together in a sincere desire to correct unfair conditions, we will find that our recommendations will be weighed carefully and given respectful consideration."

Labor Briefs . . .

• **Boost for painters**—A new three-year contract covering some 2,500 painters in the Seattle area grants a total wage boost of 40 cents—18 cents now, 12 cents Jan. 1, and 10 cents in 1958, making the scale $2.81 for the balance of this year. And in addition, they will have the benefit of an "up only" escalator clause which is tied to the cost of living.

• **Better understanding**—Members of industry, the building trades and contractor organizations have formed the Stabilization and Progress Council of Southwest Louisiana in order to promote a better understanding of mutual problems and to contribute to the economic welfare of the area through the development of better labor relations.

• **Vacation pay**—The government of British Columbia is seeking legislation that will guarantee labor two weeks annual vacation with pay. Present law provides for one week. Under the proposal, the two weeks could be taken separately or together—but workers wouldn't be allowed vacation pay in lieu of time off.

• **Bargaining climate**—After taking a look at the nation's economic situation, AFL-CIO economist Nat Goldfinger says substantial gains in wages and fringe benefits should be possible this year. He expects business profits in most industries to continue moving up.

• **Portal pay?**—Operating engineers, teamsters and cement finishers have struck AEC construction projects at the Hanford Works in Richland, Wash., in protest over the loss of compensation for the time it takes to get to jobs in distant parts of the atomic reservation. The old agreement that gave such pay was cancelled, as construction neared completion and workers were transferred to an area contract.

OFFICIAL PROPOSALS

Bids: May 3, 1956

City of Elizabeth, New Jersey

NOTICE TO BIDDERS

Sealed proposals for the construction of Alterations and Additions to the Sewerage System will be received by the Board of Public Works of the City of Elizabeth, New Jersey, at a meeting to be held in the Council Chamber at the City Hall at 2:00 P.M., Eastern Daylight Saving Time on Thursday, May 3, 1956, and then publicly opened and read. No proposal will be accepted after said hour. Proposals will be received on each:

Contract 5A: Easterly Intercepting Sewer Pine Street to Trumbull Street And Storm Water Regulator Chambers

Contract 5B: Easterly Intercepting Sewer Trumbull Street to Humboldt Avenue

Information for Bidders, Proposal forms, specimen Contract, Plans, Specifications and other pertinent Contract Documents for any or all of the foregoing contracts may be examined at the office of Henry Kreh, Jr., Consulting Engineer, 433 N. Broad St., Elizabeth, N. J. Alexander Potter Associates, Associate Engineers, 50 Church St., New York, and at the office of the City Engineer, City Hall, Elizabeth, N. J., between the hours of 10 A.M. and 4 P.M. daily except Saturdays, Sundays and holidays and there obtained upon making a deposit of Fifty ($50.00) dollars, which will be refunded to bidders within thirty (30) days after the proposals are opened and upon return of the data undamaged. Half of this deposit will be refunded to non-bidders.

Extra copies of specifications may be obtained at the cost of Ten ($10.00) dollars each and extra sheets may be obtained at the cost of One ($1.00) dollar each which sums will not be refunded.

Bidders may submit proposals on either one or both contracts.

The scope of work under each contract is as follows:

CONTRACT 5A:

Approximately 2600 lineal feet of 54-inch diam. reinforced concrete pipe sewer; 1005 lineal feet of 48-inch diam. reinforced concrete pipe sewer; three (3) Storm water regulator chambers; miscellaneous appurtenances and items of work as required for a complete project.

CONTRACT 5B:

Approximately 2700 lineal feet of 42-inch diam. of reinforced concrete pipe sewer; 400± lineal feet of 48-inch diam. reinforced concrete pipe sewer; 625 lineal feet of 30-inch reinforced concrete pipe sewer; 350± of undercrossing under tracks of N. J. Central Railroad; and miscellaneous appurtenances and items of work as required for a complete project.

Prospective bidders will be required to fill in answers in Questionnaire of Financial Statment which is authorized by State Law and which must be approved by the Board of Public Works before bidders are eligible for bidding. Questionnaire forms may be obtained at the office of the City Engineer.

No proposal shall be considered unless accompanied by a bid bond of a corporation acceptable to the City, or a cashier's check or a certified check upon some good and acceptable bank, in the penal sum of 10% of the total amount of each bid as a guarantee that if the contract upon which the bidder has bid shall be awarded to said bidder, he will enter into a contract for the work and do so within the time stipulated in the Notice of Award for said work and failing to do so the bidder and surety shall forfeit to the City of Elizabeth, the amount of said Bid Bond or check. The Bid Bond shall be executed by the bidder and surety company on form furnished by the City.

A bidder to whom a contract is awarded shall furnish a Performance Bond on a surety company duly licensed in the State of New Jersey, in the sum of 100 per cent of the amount of the contract, conditioned upon the faithful performance of the terms of the contract.

The successful bidder will be required to comply with all State Laws governing the execution of Municipal contracts in the State of New Jersey.

The Board of Public Works reserves the right to reject any and all bids as it may deem best for the interests of the City of Elizabeth, and to waive any informality in the bid.

BY DIRECTION OF THE
BOARD OF PUBLIC WORKS.
Robert S. Everett
Clerk, Board of Public Works.
April 5, 1956

OFFICIAL PROPOSALS

Bids: April 18, 1956

Indiana Toll Road Commission
309 W. Washington Street
Old Trails Building
Indianapolis, Indiana

NOTICE TO BIDDERS
Contract T.M.-1

Sealed proposals will be received by the Indiana Toll Road Commission at or before 10:00 A.M., Central Standard Time, April 18, 1956 for the performance of the contract enumerated above.

Contract T.M.-1, Traffic Markings, consists of furnishing and applying reflectorized paint traffic markings on the pavement of the Indiana East-West Toll Road including the interchanges, parts of the service areas, and access roads. This work is located along the route of the Indiana East-West Toll Road in Steuben, LaGrange, Elkhart, St. Joseph, LaPorte, and Lake Counties, Indiana.

Copies of the Plans, Standard Specifications, Supplemental Specifications for Traffic Markings and Proposal Forms for said Contract are available for public inspection or purchase at the office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set, which are non-returnable.

Standard Specifications for the Indiana East-West Toll Road	$5.00
Plans and Proposal Forms	$8.00
Supplemental Specifications For Traffic Markings	$2.00

All proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Contractor's statement for qualification on the forms supplied by the Commission will be required from all Bidders.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of five (5%) percent of the total price bid for the contract. The Proposal Guaranty shall be in the form of an acceptable surety bond or certified check on a solvent bank. If the Bidder is an out of state corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes, and that the corporation is authorized to transact business in the State of Indiana.

All bids must be received at or before 10:00 A.M., Central Standard Time, April 18, 1956, in the offices of the Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. At said hour, the bid box will be publicly opened and the bids read.

The award of the above Contract, if any award be made, will be to the Bidder whose Proposal is lowest and best for the performance of the work, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

INDIANA TOLL ROAD COMMISSION
Dr. Dillon Geiger
Chairman
Charles W. Keating
Secretary-Treasurer

Bids: April 12, 1956

Delaware River Port Authority
Administration Building
Camden, New Jersey

PAINTING THE BENJAMIN FRANKLIN BRIDGE OVER THE DELAWARE RIVER CONNECTING PHILADELPHIA, PENNSYLVANIA AND CAMDEN, NEW JERSEY—CONTRACT NO. 30-F

Sealed bids will be received for Painting the Benjamin Franklin Bridge over the Delaware River connecting Philadelphia, Pennsylvania, and Camden, New Jersey, known as Contract No. 30-F at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey, until 2:30 P.M. Eastern Standard Time, April 12, 1956, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon the deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $20,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
Joseph K. Costello, Executive Director

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4662) will be received at Ogden, Utah, until May 8, 1956, for furnishing labor and materials for Slaterville Diversion Dam and Layton Pump Intake Channel, Weber Basin Project, Utah. Location near Ogden, Utah. Principal items are 69,400 cu. yds. excavation; 18,500 cu. yds. placing and compacting earth lining for canal; 1,900 cu. yds. concrete in structures; furnishing and installing ten radial gates, and radial-gate hoists; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City, Utah; P. O. Box 387, Ogden, Utah; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4670) will be received at Rupert, Idaho, until May 22, 1956, for furnishing labor and materials for American Falls Pumping Plant and Discharge Line, Michaud Flats Project, Idaho. Location in American Falls, Idaho. Principal items are 17,940 cu. yds. excavation; 810 cu. yds. concrete; 5,170 lin. ft. concrete pipe; 66,000 pounds furnishing and erecting steel for pumping plant superstructure; 1,215 barrels furnishing and handling cement; and other work. Completion time 550 days. For particulars, address Bureau of Reclamation, P. O. Box 937, Boise, Idaho; Rupert, Idaho; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4663) will be received at Lindsay, California, until May 8, 1956, for furnishing labor and materials for Shafter-Wasco Laterals and Sublaterals, Unit I, Lateral 1344 Station 249+54 to Station 573+19, Shafter-Wasco Irrigation District, Friant-Kern Canal Distribution System, Central Valley Project, California. Location near Wasco, California. Principal items are earthwork for and furnishing and installing about 48 miles of precast concrete

U. S. Government

pipe lines. Pipe diameters vary from 12 to 66 inches with option for installation of asbestos-cement pipe for pipe diameters of 24 inches or less; furnishing and installing 335 gate valves, 50 linemeters, and 184 vertical flowmeters; and other work. Completion time 600 days. For particulars, address Bureau of Reclamation, P. O. Box 525, Lindsay, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4667) will be received at Ephrata, Washington, until April 26, 1956, for furnishing labor and materials for Earthwork and Structures for Part 1 of Block 18 Laterals and Wasteways, East Low Canal Laterals, Columbia Basin Project, Washington. Location near Connell, Washington. Principal items are 367,000 cu. yds. excavation; 1,200 cu. yds. concrete in structures; 4,400 lin. ft. concrete pipe; furnishing and installing 8 outdoor-type pumping units and accessories; and other work. Completion time 285 days. For particulars, address Bureau of Reclamation, P. O. Box 368, Ephrata, Washington, or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4671) will be received at Bridgeport, Washington, until May 3, 1956, for furnishing labor and materials for Bridgeport Bar Pumping Plants and Distribution System, Bridgeport Bar Irrigation District, Foster Creek Division, Chief Joseph Dam Project, Washington. Location near Bridgeport, Washington. Principal items are 5,500 cu. yds. excavation and backfill of pipe trenches; 7,500 cu. yds. excavation for Bar Area Pumping Plant; 23,050 lin. ft. furnishing and installing 4-inch to 24-inch diameter steel pipe in distribution system; furnishing and erecting steel water storage tank; and other work. Completion time 320 days. For particulars, address Bureau of Reclamation, P. O. Box 937, Boise, Idaho; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4672) will be received at Denver, Colorado, until May 15, 1956, for furnishing motor-driven, horizontal, centrifugal-type pumping units as follows: two units each with capacity of 33.5 cfs at 57 foot head; two units each with capacity of 24 cfs at 131 foot head; and four units each with capacity of 20.5 cfs at 264 foot head for Frenchman Springs Pumping Plant, West Canal Laterals, Block 78, Columbia Basin Project, Washington. Delivery is desired within 330 days. For particulars address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSAL

RATE: $2.10 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: April 12, 1956

New York State Road Work

NOTICE TO CONTRACTORS: STATE

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT 2, L. Ketchum, District Engineer, 109 No. Genesee St., Utica, N. Y.						
Madison	FAS8 56-9	Stockbridge Falls-Merrillsville, Pt. 2 Proj. 8360(2)	2.43	Graded Gravel Bit. Surf. Treat.; 3 Brs. Twin Conc. Boxes 28', 30' & 32'	$15,000 Plans $15	$260,000
Montgomery	MT 56-1	New York State Thruway—Mohawk Section—Sub. 12C (Canoga Creek-Fort Plain)	—	Drainage Basin with Side Gate and Misc. Work	$300 Plans $10	5,500
DISTRICT 3, Wm. Robinson, District Engineer, Weigh Lock Building, Syracuse, N. Y.						
Onondaga	FARC 56-97 FGRC 56-98	Baldwinsville-Cold Spring, S. H. 671 Cold Spring-Liverpool, S.H. 670 Proj. Nos. 8405(2); 8(405)(3)	1.06	Asp. Conc. Opt. 1 Br. Deck Plate Girder 500'; 1 RR Sep. Comp. I-Beam 164.5'	$85,000 Plans $25	1,470,000
DISTRICT 4, B. F. Penny, Acting District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe	FARC 56-88	Pittsford-Palmyra, Pt. 1 & Pt. 2, S.H. 706-707 Proj. No. F744(6)	7.23	Asp. Conc. Opt. = 7.07 Mi.; Fdtn. Crse. Grav. = 0.16 Mi., Repair to Canal Br. No. 2	$50,000 Plans $25	864,000
DISTRICT 5, E. G. H. Youngmann, District Engineer, 65 Court Street, Buffalo, N. Y.						
Cattaraugus	FAC 56-16 FARC 56-79	City of Olean, South Union Street Olean-Knapp Creek, Pt. 1, S.H. 9092 Proj. 8391(1)	3.21	Asp. Conc. Opt. = 3.15 Mi. Misc. Work = 0.06 Mi.	$42,000 Plans $15	723,000
DISTRICT 6, J. H. Thomas, District Engineer, 30 W. Main Street, Hornell, N. Y.						
Tioga	FARC 56-83	Spencer-Candor, Pt. 1 & Pt. 2, S.H. 845-1079 Owego-Candor, Pt. 2, S.H. 5471 Proj. 8730(3)	4.49	Asp. Conc. Opt. = 4.44 Mi. Misc. Work = 0.05 Mi.	$57,000 Plans $15	955,000
DISTRICT 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Dutchess, Putnam and Westchester	TSP RC56-2	Taconic State Parkway, Westchester County Section, Sections 2, 3 and 4	0.40	Asp. Conc. Opt. = 0.15 Mi. Misc. Work = 0.25 Mi.	$3,200 Plans $10	57,000
DISTRICT 9, F. J. Weber, Acting District Engineer, 71 Frederick Street, Binghamton, N. Y.						
Broome and Chenango	FARC 56-93 FAS SH56-14	Whitney Point-Greene, Pts. 1 & 2, Hy. No. 206-1-1 and 206-2-1, Whitney Point-Greene, Pts. 1A and 2A, S.H. 8489-9243 Proj. 8449(1)	10.84	Bit. Mac. Type I	$100,000 Plans $25	1,803,000
Sullivan	FARC 56-8P	Bloomingburg-Monticello, Pt. 2, S.H. 5457 Bloomingburg-Monticello, Pt. 1, S.H. 5510-5510A Proj. F495(10)	8.39 (1.54 Acc.)	9" Cem. Conc. Pavt., 50'-62' Wide = 8.39 Mi.; Cem. Conc. Pavt. (Acc.) = 142. Mi.; Asp. Conc. Opt. = 0.12 Mi., R.C. Closed Box Hy. Sep. 31'	$160,000 Plans $50	2,912,000
Sullivan	FARC 56-78	Forestdale-Mongaup Valley, S.H. 986 Monticello-Mongaup Valley, S.H. 890 Proj. S194(2)	7.66	Asp. Conc. Opt. Twin Corr. Plate Pipe Arch 28.5'	$80,000 Plans $25	$1,438,000
DISTRICT 10, M. E. Gout, District Engineer, Montauk Highway at Little East Neck Road, Babylon, N. I., N. Y.						
Kings	FA BQE56-3	Brooklyn-Queens Expressway Contract No. 16w Demolition Proj. U1066(9)	0.52	Demolition	$2,500 Plans $10	47,000
Kings	FA BQE56-2	Brooklyn-Queens Expressway Contract 6B Proj. U1066(17)	0.82	9" Cem. Conc. Pavt. with Carbon Black, 2 at 36' Wide = 0.27 Mi. Lighting, Signs & Misc. Work = 0.55 Mi.; 6 Hy. Sept. Beams 48.3', 44.6', 48.2', 48.2', 111.1' and 97.1'; 2 Hy. Sep. I-Beams & Girders, 90.5' and 93.7'	$985,000 Plans $100	2,930,000
Kings	FA BQE56-1	Brooklyn-Queens Expressway Contract 7B Proj. U1066(16)	0.46 (1.03 Acc.)	9" Cem. Conc. Pavt. with Carbon Black, 2 at 36' Wide = 0.33 Mi.; Cem. Conc. Pavt. = 0.25 Mi.; Sheet Asph. Pavt. (Service Rds.) = 0.81 Mi. Misc. Work = 0.10 Mi.; 4 Hy. Sept. I-Beams 104.4', 104.4', 98.3' and 92.6'	$160,000 Plans $100	2,894,000
Nassau	FA HHE 56-4	Horace Harding Expressway Extension Contract No. 2 Proj. U862(7)	3.32 (5.86 Acc.)	9" Reinf. Cem. Conc. Pavt., 2 at 36' Wide = 2.84 Mi.; Asp. Conc. Opt. = 5.86 Mi. Drainage & Demolition 0.48 Mi., 2 Hy. Sept. Reinf. Conc. Rigid Frame, 97.5' and 101', 1 Hy. Sep. Girder 62'	$320,000 Plans $50	5,812,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "STATE OF NEW YORK, COMMISSIONER OF TAXATION AND FINANCE" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

John W. Johnson
Supt. of Public Works

Bids: April 12, 1956

Delaware River Port Authority Administration Building Camden, New Jersey

PAVING, GRADING AND DRAINAGE FROM THE NORTH-SOUTH FREEWAY TO BLACK HORSE PIKE AND MISCELLANEOUS ITEMS
WALT WHITMAN BRIDGE CONTRACT NO. G-6

Sealed bids will be received for "Paving, Grading and Drainage from the North-South Freeway to Black Horse Pike and Miscellaneous Items" for the Walt Whitman Bridge, known as Contract No. G-6 at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey until 2:30 P. M. Eastern Standard Time, April 12, 1956 at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon the deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $40,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
Executive Director

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 16-4664) will be received at Boulder City, Nevada, until April 26, 1956, for furnishing labor and materials for Sewage Works for Hoover Power Plant, Boulder Canyon Project, Arizona-California-Nevada. Location near Boulder City, Nevada. Principal items are constructing sewage works for Hoover Power Plant—lump sum; and other work. Completion time 180 days. For particulars, address Bureau of Reclamation, Boulder City, Nevada; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: April 17, 1956

The Hydro-Electric Power Commission of Ontario

ST. LAWRENCE POWER PROJECT
CANADIAN NATIONAL RAILWAYS RELOCATION
TRACK LAYING AND BALLASTING

SEALED TENDERS, in quadruplicate, addressed to the undersigned, 620 University Avenue, Toronto 2, Ontario, and clearly marked

"TENDER FOR ST. LAWRENCE POWER PROJECT CANADIAN NATIONAL RAILWAYS RELOCATION TRACK LAYING AND BALLASTING"

will be received up to 4:30 o'clock p.m., Eastern Standard Time, on

TUESDAY, APRIL 17, 1956

The work consists of track laying, ballasting and associated work for approximately 29.5 miles of double track main line, on the relocation of the Canadian National Railways. All permanent construction materials will be supplied by the Commission or the Railway.

The successful tenderer will be required to commence work within fifteen (15) calendar days after date of receipt of notice of award of the contract and have all work completed ready for operation by the Railway by May 1, 1957.

Copies of the tendering documents may be obtained on or after March 20, 1956, at the office of the Director of Supply, 620 University Avenue, Toronto 2, Ontario, on payment of twenty-five dollars ($25.00) for each set. This charge will not be refunded.

Tendering documents may be inspected at the above location and at the offices of the following: the Commission's Field Office, Cornwall, Ontario; Power Authority of the State of New York, 270 Broadway, New York 7, New York; and Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts.

Each tender must be accompanied by a certified cheque drawn on a Canadian chartered bank for a sum calculated as follows: On tenders up to $500,000, the sum shall be 10 per cent of the total amount of the tender; on tenders over $500,000, the sum shall be 10 per cent of the first $500,000 and 5 per cent of the excess over $500,000. Provisions for the return of the cheques appear in the tendering documents.

The successful tenderer will be required to furnish a performance bond in the form approved by the Commission and issued by a bonding company licensed as such in the Province of Ontario and acceptable to the Commission for one hundred per cent (100%) of the total amount of the contract.

The lowest or any tender will not necessarily be accepted.

E. B. EASSON
Secretary

U. S. Government

GOVT OF DIST. OF COL., DEPT. OF SANY. ENGG., Mch. 22, 1956. SEALED PROPOSALS will be recd. in Rm. 401, 499 Pa. Ave., N.W., Wash. 1, D. C., until 2 PM, DST, May 8, 1956, and then publicly opened and read for Sewage Treatment Plant Additions, Secondary Treatment Plant, Unit 22, First Half, consist. of constr. of Blower Bldg., New Aeration Tanks, New Final Sedimentation Tanks, Final Tank Gallery, Conduits, Tunnels, New Power Substation, and appurtenant work at the Sewage Treatment Plant of D. C., Blue Plains. Proposal forms, plans and specns. obtainable from Supervisor, Contr. & Bond Section, Procurement Office, D. C., Rm. 406, 499 Penn. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to Collector of Taxes, D. C. (Tel. NA 8-6000, Ext. 2378).

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-46681) will be received at Ephrata, Washington, until May 22, 1956, for furnishing labor and materials for Earthwork and Structures for Block 77 Laterals, Wasteways and Drains, West Canal Laterals, Columbia Basin Project, Washington. Location near Quincy, Washington. Principal items are 400,000 cu. yds. excavation; 1,000 cu. yds. concrete in structures; 8,700 lin. ft. furnishing and laying concrete pipe; and other work. Completion time 540 days. For particulars, address Bureau of Reclamation, P. O. Box 368, Ephrata, Washington, or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: April 18, 1956

Indiana Toll Road Commission
309 W. Washington Street
Old Trails Building
Indianapolis, Indiana

NOTICE TO BIDDERS
Contract No. L-1

Sealed proposals will be received by the Indiana Toll Road Commission at or before 10:00 A.M., Central Standard Time, April 18, 1956 for the performance of the contract enumerated above.

This contract shall consist of the furnishing and installing the lubrication equipment for the Maintenance Buildings, including all labor, materials, tools, equipment and other incidentals all in strict accordance with the Plans and the Specifications at the following buildings:

M-1—Located about seven miles west of Chesterton, Indiana, the site being on the northwest corner of the overpass intersection of Willow Creek Road with the Toll Road (Toll Road Stations 1414-1451) in Porter County, Indiana.

M-2—Located about one-half mile south of U. S. Route 20 on Fail Road, the site being on the southwest corner of the overpass intersection of Fail Road with the Toll Road (Toll Road Stations 2949-2954) in LaPorte County, Indiana.

M-3—Located about two miles north of U. S. Route 20 on Ash Road, the site being on the southwest corner of the overpass intersection of Ash Road with the Toll Road (Toll Road Stations 4796-4800) in St. Joseph County, Indiana.

M-4—Located about ½ mile east of Scott, Indiana, the site being on the southwest corner of the intersection of Olney Road at its overpass intersection with the Toll Road (Toll Road Stations 6244-6251) in LaGrange County, Indiana.

M-5—Located about three and one-half miles east of Orland, Indiana, north of Indiana Route 120 about 1 mile on a country road, the site being on the southwest corner of said county road at its underpass intersection with the Toll Road (Toll Road Stations 7472-7477) in Steuben County, Indiana.

Copies of the Plans, Standard Specifications, Supplemental Specifications for Lubrication Equipment and Proposal Forms for said Contract are available for public inspection or purchase at the office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are nonreturnable:

Standard Specifications for the Indiana East-West Toll Road	$5.00
Supplemental Specifications and Plans for Lubrication Equipment	$3.00
Proposal Form for Contract No. L-1	$1.00

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Contractor's statement for qualification on the forms supplied by the Commission will be required from all Bidders.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of five (5%) per cent of the total price bid for the Contract. The Proposal Guaranty shall be in the form of an acceptable surety bond or a certified check on a solvent bank.

If the Bidder is an out of state corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes, and that the corporation is authorized to transact business in the State of Indiana.

All bids must be received at or before 10:00 A.M., Central Standard Time, April 18, 1956, in the offices of the Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. At said hour, the bid box will be publicly opened and the bids read.

The award of the above Contract, if any award be made, will be to the Bidder or Bidders whose Proposal is lowest and best for the performance of the work, taken as a whole, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

INDIANA TOLL ROAD COMMISSION
Dr. Dillon Geiger
Chairman
Charles W. Keating
Secretary-Treasurer

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SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Construction Supt. capable of operating multi-million dollar building projects. Experience on industrial, commercial and institutional buildings required.. Kindly submit work history and references, stating specific buildings you have constructed, their approximate value, and type of construction. Also state age and marital status. Enclose recent photograph if possible. Interview will be arranged & salary discussed, if application warrants. Location: North Western Ohio. P-1080, Engineering News-Record.

Construction Supt. Required top-notch man for bridge supt., capable of handling both large & small structures. Should have administrative ability to handle multiple unit projects. Location: North Western Ohio. P-1083, Engineering News-Record.

General Superintendent—who is now super-intendent engineer and wants to take next step up with growing N. J. Organization. P-1105, Engineering News-Record.

The Canon City Metropolitan Sanitation Dis-trict, Canon City, Colorado, wishes to contact qualified, experienced and competent sewage treatment plant operator of a new sewage disposal plant. The plant will be completed by late fall or early winter, operator's services begin in early summer, during construction of plant. Address all communications to: Geo. A. Wadleigh, Secretary Canon City Metropolitan Sanitation District P. O. Box 150 Canon City, Colorado.

Wanted—Building superintendents, estima-tors carpenter superintendents & general foreman. Excellent opportunities and starting salary. J. L. Simmons Company, Inc., 506 South Wabash Avenue, Chicago 5, Illinois. Webster 9-2355.

100 Civil Engineer Vacancies—The Michigan Civil Service Commission is currently recruiting to fill a large number of positions in the State Highway Department created by an expansion in the road construction program from $70 million in 1955 to $150 million in 1956. A comprehensive Engineer Trainee Program is offered to graduates of accredited engineering colleges. The program continues for 12 to 18 months including seven week assignments in each of the following: Bridge Construction, bridge design, road construction, road design, road surveys, maintenance, planning and traffic and testing and research (Soils). One hundred and ninety-one persons have entered this program in the last seven years. One hundred and thirty-two remain. The figures speak for themselves. Job opportunity, promotion, 40 hour work week, security, social security, state pension plan, vacation, sick leave and many other benefits generally available only under a progressive civil service system are yours when you work for the Michigan State Highway Department. Salary for the Engineer Trainee Program starts at $4600 plus $20 weekly expense allowance while on most training assignments with 6 month increases to $5200 in 18 months. First promotion brings salary range with maximum of $6800. Next promotion to project engineer carries salary at maximum of $8150. Write for application for Engineer Trainee I to Michigan Civil Service, Recruitment and Placement, Lansing 13, Michigan.

Two college teachers to teach mechanics and/ or civil engineering subjects other than structural. Salary and rank dependent on qualifications. Location Northern New York. P-1137, Engineering News Record.

Experienced building estimator with Mid-western contractor specializing in industrial, commercial and public works. Furnish experience record, references, salary desired and photograph, if available. Permanent job. P-1093, Engineering News-Record.

Engineer—Civil man, 30 to 45, with degree in civil engineering and experience in structural drafting and crane design as assistant chief engineer for progressive Milwaukee company. Selling, supervision, design, and drafting involved in this position. The man we want must have qualifications to become chief engineer within a few years. Salary to start $600.00 with many benefits. P-1251, Engineering News-Record.

ENGINEERS
DESIGNERS DRAFTSMEN
STRUCTURAL
HIGHWAY
ELECTRICAL
ARCHITECTURAL

Permanent Positions
Available in Florida and Pennsylvania
Excellent opportunities for advancement
Paid Vacation, Sick Leave, Hospitalization

Initial resumé should include experience, education, references and salary requirements

GLACE & GLACE, INC.
1001 North Front Street, Harrisburg, Pennsylvania

EXPERIENCED HYDRAULICS ENGINEER WANTED

Graduate engineer experienced in paper mill hydraulics, planning and development of piping layout systems, etc. for large expanding and progressive mill in Maryland. Good salary, all benefits and excellent opportunity for advancement. Send detailed resume of experience and education to Director of Personnel
West Virginia Pulp & Paper Company
Luke, Maryland

CONSTRUCTION FOREMAN

With extensive experience all types sewers, water mains, general heavy underground construction within N. Y. State. We require top notch foreman —not job superintendent. Permanent position for qualified person able to justify good salary.

P-1273, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

POSITIONS VACANT

Designers & Draftsmen—structural, mechani-cal & electrical. For work on industrial buildings & power plants. Long range program, top salaries, advancement & vacations. Marbarry Corp., 140 Nassau St., N.Y.C. COrtlandt 7-0322.

Engineers experienced in water and sewage works projects or related fields. Opportunity for permanent connection with long established consulting firm. Please state full qualifications, experience, references and salary requirements. Location Ohio. P-9548, Engineering News-Record.

Old Established firm wants engineer & esti-mator for diversified general construction: schools, airports, sewage disposals. Must be able to take charge in field and do estimating work. Age 30-45. Must be top man. Permanent position. Salary open. Reply P. O. Box 430, Warren, Ohio.

Civil Engineer II or III $5356-$7202, depending on education and experience, City of Peoria Engineering Department. For complete information, write to Personnel Officer, Room 208 City Hall, Peoria, Illinois.

Wanted: Engineer-Estimator for heavy engi-neering contractor in Texas. Excellent opportunity. Please give experience and recent photograph. P-1219, Engineering News-Record.

Reinforcing Steel detailers for established firm in New York City and other desirable Eastern locations. Send resume of experience and salary requirements. Replies confidential. P-1218, Engineering News-Record.

Municipal Engineer: Chief Engineer wanted to be in charge of Engineering Division of Public Works Department for sewer and street design layout and inspection of construction. Salary range $7,100.00 to $9,100.00. State qualifications and experience. P-1241, Engineering News-Record.

Reinforcing Steel detailer wanted by fast growing Bar Fabricator. Excellent salary and good chance for advancement. Two to three years experience preferred. Send resume or phone York, Pa. 7741, Brocker Mfg. & Supply Co.

Engineers: Experienced highway, bridge, drainage, design, draftsman and other positions available. Submit complete resume. Interview will be arranged. Reply P-1174, Engineering News Record, 520 N. Michigan Ave. Chicago 11, Illinois.

SALARIED POSITIONS $5,000 — $35,000

We offer the original personal employment service (established 46 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.

R. W. BIXBY, Inc.
559 Brisbane Bldg. Buffalo 3, N. Y.

SHOVEL SALESMAN

Major manufacturer of power shovels has opening in Eastern Canada for assistant to territorial sales manager. No ceiling on potential for qualified man. Direct sales of large machines plus work with Distributors on smaller sizes make work more interesting, more profitable. Engineering degree preferred but not required. Opportunity deserves your attention if you are ready to make your last job change. Write fully, in confidence.

SW-1203, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

DESIGN ENGINEER

Degree in Mechanical Engineering. Should be capable of handling structural and thermal calculations. Work involves design of automotive and truck-trailer body components in General Engineering Department of leading manufacturer. Salary commensurate with experience. Opportunity for alert individual in growing industry.

P-9529, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS VACANT

Civil Engineer I $4446-$5356. Graduate de-gree in Civil or Mechanic Engineering. Engineering Department, City of Peoria, for complete information, write to Personnel Officer, Room 208 City Hall, Peoria, Illinois.

Small company in North Branch, N. J. re-quires young chemical engineer. Experience in process equipment layout and cost estimating desirable. Pleasant surroundings and congenial working conditions. Phone Randolph 5-3232, Ext. 8.

A new general engineering construction com-pany now being organized in California requires a construction executive with ability to develop a sound producing company. Applicant must have engineering degree, necessary field and office experience and have thorough knowledge of business. Salary open to right person. P-1268, Engineering News-Record.

Positions Available for New York State Residents City of New Rochelle, N. Y. Assistant city engineer: (competitive) minimum qualifications: Degree in civil engineering from accredited college or university and 8 years public works engineering experience. Salary $6130-$7870. Must be New York State registered professional engineer. Junior engineer (competitive) minimum qualifications: degree in civil engineering from accredited college or university, or high school graduate plus acceptable equivalent combination of education and experience. Salary $3920-$5040. These positions carry three weeks vacation, sick leave, hospitalization, New York State Retirement System. Apply to Department of Personnel & Budget, City Hall, New Rochelle, N. Y. Telephone: NE 2-2021.

EMPLOYMENT SERVICE

Salaried personnel, $5,000-$30,000. This con-fidential service, established 1920, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, P. O. Box 674, Manchester, Vermont.

(Continued on page 168)

LOCKHEED AIRCRAFT CORP.

Georgia Division

Has immediate opening for

STRUCTURAL ENGINEER–Senior

Must have a minimum of 3 years responsible structural design experience.

Write in complete confidence to

Dept. ENR-45
LOCKHEED AIRCRAFT CORPORATION
761 Peachtree St., N. E.
Atlanta, Georgia

ENGINEERS DESIGNERS DRAFTSMEN

Permanent openings in our St. Louis and San Francisco offices for qualified personnel experienced in design of structural steel and reinforced concrete for work on

BRIDGES & BUILDINGS
HYDROELECTRIC PROJECTS
INDUSTRIAL FACILITIES

Openings also available for mechanical and electrical designers and draftsmen for work on power plants, test facilities, large electrical installations and general industrial projects. Several recent graduate engineers will be added in all categories.

We desire men who want long range employment with ample opportunity for professional development and advancement. Excellent Employee Benefits & Retirement Plan, generous annual leave and sick leave, Blue Cross, paid holidays.

Please write fully to

SVERDRUP & PARCEL, INC.
Engineers — Architects
915 Olive Street St. Louis 1, Mo.

ACADEMIC POSITIONS AVAILABLE

Young engineers are invited to investigate opportunities for teaching appointments in Civil Engineering and Engineering Mechanics

These college teaching positions carry academic rank and offer time for advanced study, engineering consulting, and research. Salaries are commensurate with those in other engineering activities. Tuition for graduate study and professional development to the extent of 6 credit hours is remitted. Advance study offered in Engineering Mechanics, Structural, Sanitary or Highway Engineering and City Planning

Visit our campus, or write Head of Department of Civil Engineering

CASE
INSTITUTE OF TECHNOLOGY
University Circle, Cleveland 6, O.

ENGINEERS

CIVIL
MECHANICAL
INDUSTRIAL
ELECTRICAL

Graduates to age 35 for production assignments leading to supervisory positions with progressive expanding company engaged in steel mill service work utilizing heavy construction equipment. Top starting salary and excellent benefit program.

Send complete resume of personal background and experience to

Personnel Director
HECKETT ENGINEERING, Inc.
Butler, Penna.

ENGINEERS

HIGHWAYS AND BRIDGES
Designers
Draftsmen
OPENINGS At
Rochester, Penna., Harrisburg, Penna., College Park, Md.

ARCHITECTS
Architectural Draftsmen
OPENINGS At
Rochester, Penna.

Send Resume Including Education, Experience, Salary Requirements and Availability TO:

Richard L. Shaw, Personnel Director

Michael Baker, Jr., Inc.
Consulting Engineers
Baker Building Rochester, Penna.

MATERIALS ENGINEER

Graduate with strong background in soils, asphalt and concrete testing. Overseas—single status. Very high earnings.

METCALF & EDDY
and
ALFRED HOPKINS & ASSOCIATES

334 Boylston Boston, Mass.
346 Broadway New York, N. Y.

Graduate Civil Engineers

Not over 27 and single. Must have military training completed and interested in the building construction business, starting in the field. We offer opportunity for rapid advancement to ambitious, hard-working young men willing to accept responsibility. Starting salary $92.50 per week if unexperienced, with higher wages for those with some experience.

Send complete history data.

Martin K. Eby Construction Co., Inc.
610 N. Main, Wichita 5, Kansas.

STRUCTURAL ENGINEER

Opportunity for structural engineer with 10 to 15 years structural design, detailing and checking experience on bridges and buildings. Vacancy in position as structural checker; salary open. Must be thoroughly familiar with shop details, concrete details, construction practice and engineering drawings.

Send experience history, references, statement of availability and salary requirements in first letter.

Patchen and Zimmerman, Engineers
Augusta, Georgia

ENGINEERS

Designers Detailers Draftsmen
for work on
Bridges, Expressways, Turnpikes

PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY
PAID VACATION, SICK LEAVE HOSPITALIZATION, LIFE INSURANCE
INCLUDE EDUCATION, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER

Howard, Needles, Tammen & Bergendoff
1805 GRAND AVE. KANSAS CITY 8, MO.

SALES ENGINEERS

A major steel company has need for sales engineers to promote and sell fabricated products in middle Atlantic states. Excellent opportunities for men 25 to 30 years old with engineering background and a desire for sales work. Attractive starting salary with company car, expenses and bonus plan.

P-8324, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CONSTRUCTION DEVELOPMENT ENGINEER

An experienced and ingenious construction engineer, dedicated to the principle that labor productivity can be improved through the development of special tools, jigs and fixtures, will find in this opening an excellent opportunity with a leader in the construction of petroleum and chemical plants throughout the world. It is an unusually opportune home office assignment involving ample contacts in the field. All inquiries in confidence. Please send complete resume of experience and salary desired.

P-1245, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

HIGHWAY DESIGN ENGINEERS

Openings for highway engineers, draftsmen, detailers, designers and young graduate Civil Engineers interested in future as highway design engineers.

Excellent working conditions. Job security with ample opportunity for advancement. Voluntary employee benefit and retirement plan, generous annual leave and sick leave, Blue Cross, paid holidays.

Send full resume, salary desired and references to

SVERDRUP & PARCEL ENGINEERING CO.
1134 Locust St. St. Louis 1, Mo.

DRAFTSMEN

Experienced structural steel detailers on all types of building and conveyor work. Long range program, good working conditions in a Consulting Engineers Office, paid holidays, vacation plan and health and accident insurance program.

Send complete information to:

SAMBORN, STEKETEE & ASSOCIATES
1214 Cherry Street Toledo 4, Ohio

DESIGN ENGINEERS

You can fill a desirable *permanent* position in McKee's enlarged Refinery, Metals or Industrial Divisions. Our expansion program gives you excellent opportunity for advancement in one of the world's largest engineering firms.

World-wide McKee operation offers you wide choice in the design of Petroleum Refineries, Chemical Plants, Blast Furnaces, Steel Plants, Sintering Plants and Industrial Plants in the following fields:

PIPING LAYOUT, STRUCTURAL STEEL, CONCRETE, PROCESS HEATERS, EQUIPMENT SPECIFICATIONS, LAYOUT AND PROCESS DESIGN. ALSO PIPING AND ELECTRICAL DRAFTSMEN.

You get top compensation, the security of a life-long pension, paid vacations, benefits of insurance, hospitalization, sick-leave pay and training program.

You'll work with modern equipment in large air-conditioned quarters. Free parking on premises.

Cleveland has attractive residential areas, excellent schools and colleges for you and your family. McKee makes generous transportation and moving allowances.

Write for an interview giving education and experience. No age limitations. All letters kept strictly confidential. Write today to:

Edward A. Kolner
ARTHUR G. McKEE & COMPANY
2300 Chester Avenue
Cleveland 1, Ohio

ALASKAN CONSTRUCTION needs ENGINEERS

Electrical, Mechanical, Soils, & Architectural

Excellent Salaries

Send complete resume of education and experience to

Metcalf & Eddy
Statler Bldg. Boston 16, Mass.

WANTED
DIRECTOR OF PUBLIC WORKS AND CIVIL ENGINEER

Yuba City, Calif. (pop. 10,294) invites applications from California registered civil engineers. Closing date April 15, 1956. Request application forms and complete information from F. K. Dawson, City Administrator, City Hall, Yuba City, California.

ENGINEERS & DESIGNERS

MECHANICAL —
Design experience in one or more of the following fields: Instrumentation and controls for Industrial Equipment, Refinery and Chemical Plant Processes, Steam Power Plants, Materials Handling Equipment, Metallurgical Process Equipment such as metallurgical furnaces, kilns, crushers, or related heavy machinery, heating and ventilating, or industrial plant layout.

ELECTRICAL —
Responsible design experience on panel boards, industrial controls, power distribution or lighting.

STRUCTURAL —
Design or detailing experience in structural steel and/or re-inforced concrete for industrial projects.

PIPING —
Designers with drafting and layout on high temperature high pressure piping.

Immediate openings in our SAN FRANCISCO offices for men with above stated job experience.

BECHTEL CORP. is a progressive engineering and construction firm engaged in world-wide operations.

LIBERAL RELOCATION ALLOWANCES COVERING APPLICANTS, FAMILY & HOUSEHOLD EFFECTS

BECHTEL

Engineers - Constructors

Send Resume:
5 West 45th St. New York 17, N. Y.
220 Bush St., San Francisco, Calif.

Confidential interviews can also be obtained at: Scanlon Building, Houston, Texas, or Roosevelt Building, Los Angeles, Calif.

GENERAL SUPERINTENDENT

Young, aggressive and expanding Building Contractor offers unusual opportunity for top notch construction man with proven record. Our yearly volume is in excess of twenty million and covers the east, midwest and southern sections of the U. S. The man we are looking for must be capable of assuming full responsibility for the company's field operations. Written inquiries only will be considered from qualified applicants furnishing full experience resume and personal data.

BLOUNT BROTHERS CONSTRUCTION COMPANY
P. O. BOX 949 MONTGOMERY, ALABAMA

(Continued from page 165)

POSITIONS WANTED

Treasurer Controller—Over twelve years senior administrant of consulting engineering and construction contracting acctg. high level experience includes financing, insurance, job costs, taxes & claims. Proficient in the preparation of concise reports. Prefer New York City area. PW-9410, Engineering News-Record.

Construction Executive, buildings and heavy construction, sound experience bid to completion, qualified to manage a project, branch office or a business, seeks new connection where top man is required. Minimum $15,000. PW-8792, Engineering News-Record.

Construction Supt: 25 years experience in industrial and commercial building. Prefer work in East. PW-1173, Engineering News-Record.

LT, Civil Engineer Corps, USN, age 30, available July. Desires permanent position with contractor or consultant. B.S., U.S., Naval Academy, B.C.E. and M.C.E. Rensselaer Polytechnic Institute. Broad Engineering experience, excellent administrator. PW-1175, Engineering News-Record.

Construction Executive. Licensed Civil Engineer desires connection in charge of construction department of multi-plant organization. Handle job from design, estimating, contracting to completion. Thoroughly versed in pricing and economics of all types of construction. Some foreign experience, languages. PW-1020, Engineering News-Record.

Consulting Engr., Chief Engr., Project Mgr., Reg EE-ME. 22 yrs Industry and Railroads, 12 yrs Consulting. Power Plants, Transmission, Distribution, Industrial. $14,000 N. America, $18,000 Central or So. America. 60 days availability. PW-1147, Engineering News-Record.

Construction Estimator-Graduate Civil Engineer, 30, married, 6 yrs. experience estimating and supervising private and public buildings, schools, churches, etc. Will consider related field if opportunity warrants. PW-1144, Eng. News-Record.

Registered Engineer, building construction executive, qualified to design, estimate, manage complete project, or manage branch office. Salary bracket $15,000 year. PW-1138, Engineering News-Record.

Construction Manager—25 years experience. Seeks position as manager, superintendent or estimator with building contractor. PW-1158, Engineering News-Record.

Building Construction Superintendent; desires position with reliable organization as field superintendent, 25 years experience on construction of industrial, commercial, institutional bldgs; large scale housing etc; PW-1179, Engineering News-Record.

Construction Superintendent—Graduate civil engineer, experienced on large projects. Desire position with challenge and opportunity. PW-1220, Engineering News-Record.

Estimator and Supt. project manager highway construction 60 years of age. Good health. 10 years experience, salary bracket $10,000. per year. PW-1217, Engineering News-Record.

Construction Engineer, Civil graduate with over 8 years diversified construction experience, 6 years overseas. Spanish speaking, single, age 29, veteran. Desire foreign assignment. Available immediately. PW-1221, Engineering News-Record.

Office Manager Field Accountant. Presently employed desirous of change. 8 years of experience, B.B.A. Degree. Will travel. PW-1222, Engineering News-Record.

Civil Engineering Position wanted. Thirty years experience field and office. Responsible charge on design, estimates, field supervision and lay-out for municipal streets, water and sewerage works. PW-1237, Engineering News-Record.

Civil Eng., B.S. in C.E., P.E. N.Y. 10 yrs. diversified design exp. incl. structures & general civil engineering for multi-plant chemical manufacturer. Desires responsible position PW-1242, Engineering News-Record.

Steel erection, C.E., 34, 9 years experience plate, structural. Familiar with all types erection equip., field welding, codes. Desire position erector and/or fabricator, structural or plate. PW-1260, Engineering News-Record.

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(Classified Advertising)

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REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

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Meet Your schedule on time! Complete concrete and steel designs made. Contract, detail drawings prepared. Engineering design service. 15 Park Row, New York 38, N. Y.

BUSINESS OPPORTUNITIES

For Sale small corrugated Iron Steel Plant 30'x60' complete with cutting and punching machine, welding outfit and stock of about 20 ton wide Flange beams. Situated in Augusta, Georgia, anyone interested please call-21669-Spartanburg, S. C. or write, Mr. H. C. Gerry 184 High Point Rd, Spartanburg, S. C.

Busy engineering and surveying practice in Atlanta, Ga. For immediate sale. Est. 5 yrs. in new bldg. All furnishings & equip. complete and like new. One man operation grossed $30,000 1955, 1956 to be better. Sound reason for selling. Write BO-1225, Engineering News-Record.

Engineers—Foremen—Office Men
Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.
GEO. E. DEATHERAGE & SON CONSTRUCTION CONSULTANTS
P.O. Box 921 Lake Worth, Florida

MACHINERY and EQUIPMENT FOR HIRE
Bay City cranes, Backhoes, shovels, bulldozers, dump trucks, etc., by day, week, month or year.
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ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty third year.
WILSON *Engineering Corp.*
College House Offices HARVARD SQ. CAMBRIDGE MASS.

WANTED
USED I-BEAM TRAILER
75 to 90 tons carrying capacity, with removable goose neck. All replies held confidential. Address:
W-1193, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED
We are in market for two 802 LIMA CRANES
with wide pads and pile driving equipment and boiler.
Write
L. G. DEFELICE & SON, INC.
Nettleton Ave. North Haven, Conn.

LIMA DRAGLINE BARGAINS
Rebuilt 2400 Lima—120', 6 yd. dragline
1201 Lima—85', 3 yd. dragline
1001 Lima—80', 2-½ yd. dragline
604 Lima Comb. 1-½ yd. shovel & dragline
FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

Unit Model 1020A
TRENCHOE
1955, powered by a General Motors diesel Model 451 engine with torque converter. Serial No. 55140. Engine No. 4C-3268. Used 5 months. Price: $17,500.00.
The Jaeger-Lembo Machine Corp.
Northern Blvd., at 127 Street
Flushing 52, N. Y., HIckory 6-8800

FOR SALE
CONSTRUCTION TRESTLE GIRDERS
22 girders 68'9" long by 74" deep, welded. Web thickness ⅜", top & bottom cover plates. 38'6" center section 1¼x15" and sections 1"x15", ½x6" vertical web stiffeners both sides. Weight approx. 16,900 lb. each.
Price $1,000.00 each, f.o.b. cars, Lake Andes, South Dakota.
DONOVAN-LOVERING-BOYLE
P. O. BOX 777
PICKSTOWN, SOUTH DAKOTA

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If you mention this magazine, when writing advertisers. Naturally the publisher will appreciate it . . . but, more important, it will identify you as one of the men the advertiser wants to reach with this message . . . and help to make possible enlarged future service to you as a reader.

A LARGE AUCTION
HEAVY CONSTRUCTION EQUIPMENT
FRIDAY, APRIL 20, 9 AM — EMPORIA, KANSAS

LOCATION: 4 mi N of Emporia at Junction of State Hiway 99 & Kansas Turnpike. Emporia is 125 mi SW of Kansas City or 100 mi NE of Wichita on US Hiway 50S. A complete large spread mostly in very good condition.

TRACTORS: CAT D-9, S/N 19A 210, with 9S dozer & 2P PCU, Torque Converter, 1000 hrs & excellent; 2 D-8's, S/N 13A 3403 & 2941, Excellent pushers w/low hrs; 2 D-8's, good 2U pushers; 5 Cat 2S PCU's; 8A & 8 dozers; Fleco Rock Rake; 2 AC HD-5G Loaders, reconditioned; 2 LeT Super 'C' Tractors for pulling 50T rollers; IHC TD-14A; IHC ID-9 & H Tractors; Ford with hyd Loader.

MOTOR SCRAPERS—END & BOTTOM DUMPS: 8 Euclid 8, 12 & 14 TDT Motor Scrapers, 2 are 1955 & 2 '54 units, good to excellent; 2 AC TS-300 Motor Scrapers, good; 2 Euclid 49FD Rear Dump Trucks; 10 Euclid 9 & 43 FDT Tractor-Center Dump Trailer Units, fair to good.

GRADERS—ROLLERS: 3 Cat 12 Graders, 8T & good; 2 Adams 512 Graders; A-W 48" Elevating Grader; Cleve. Trail Grader & Sub-Grade Scraper; Servis Terracer; 2 Rome Disc Plows; LeT Ripper; Gebhardt 6x6 DD & Servis 4x4 DD Sheepfoot Rollers; 2 Small Pneumatic Rollers; Galion 3-wheel FlatWheel Roller.

SHOVEL—BUCKETS—LOADER: NORTHWEST 80D Shovel, S/N 13369, with Murphy ME-6, overhauled 800 hrs ago & very good; Gantry & 50' Drag Boom; Hendrix 4, 3, 2 yd & Yaun 1½ & 1 yd Drag Bkts; Owens ¾ & B-K 1 yd Clams; Euclid BV3-9 Loader, Cummins w/ turbosupercharger, very good.

UNDERCAR UNLOADING SYSTEM: Complete RR car unloading, Truck loading & Stockpiling Conveyor System w/Receiving Hopper, Atlas 124', 50' & 40' Conveyors, 40' Shuttle Conveyor, 25 yd Hutler Bin. All supports, Elec. motors, controls, etc. All in very good condition. NOTE: Inspect at CB&Q track 244, Lincoln, Neb.

COMPS—DRILLS—PUMPS: C-D 500 Compressor, D-13000 Engine, good; Jaeger 105 Comp; 6 Wagon Drills on rubber; C-P Triplex Tampers & Hammers, 2 Gorman-Rupp 8" Well Pt Pumps, G-R 3 & 4" Pumps, White MD Diesel Electric Set, Witte Lite Plant, 2 Lincoln 300 amp Welders.

ASPHALT EQUIP—MISC: 3tros HR Tank Car Heater; Cleaver I-AHC Car Heater & Boiler Comb; Standard Distributor on GMC 6x6; Adnun 10' Asphalt Paver; 3 Buckeye 10' Spreaders; Ottawa Self Propelled Hydra-Hammer; Jaeger 16 EL Mixer; Piper Speedigger, Other Items.

WATER WAGONS—TRUCKS—TRAILERS: CAT DW-10 w/4000 gal Trailer; EUCLID 43FDT w/5000 gal Trailer; White, Int'l, & Available tandem 3—4000 gal Water Trucks; 11 Flatbed, Winch, Dump, Grease & Tractor Trucks; 12 Pickups; Freuhauf & American tandem & Freuhauf 8A Semi-Trailers; Keystone Office; Heil 2000 gal Trailer; Autos.

SHOP EQUIP—SUPPLIES: Complete shop, power & hand tools, parts & supplies; Doghouses; Other Items.

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ECA
QUALITY REBUILTS

MANITOWOC CRANE 50-60T, serial #3520, 100' boom, 30' jib, D17000 Diesel, crawler mounted.

INDUSTRIAL BROWNHOIST LOCOMOTIVE CRANE 35-40T. Mdl. 8, #41401, 50' boom, D13000 diesel engine. Cap. at 12' radius 70,000# without outriggers or 84,000# with outriggers.

KOEHRING Mdl. 304 crane #C5934, 35' or 50' boom, gasoline engine, 30" x 13" 4" crawlers, rated 27,800# @ 12'.

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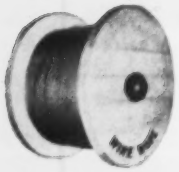

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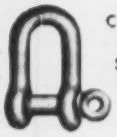

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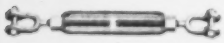

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Editorials

Federal Push for Sewage Works

THERE CAN BE NO DOUBT but that the proposed House bill relating to the extension of the expiring Water Pollution Control Act of 1948 is "grand plan" legislation, in the same sense that President Eisenhower used the term in referring to highways. For this latest version of a pollution bill provides for an appropriation of $100 million a year—until it reaches a total of $1 billion— as matching funds for cities in undertaking sewage works construction.

But the plan was obviously too "grand." It caught unprepared those who might have rallied in support. It frightened others who saw it as an impediment to passage of a needed bill they had worked hard to make acceptable. It was doomed from the start. But the very fact that Congressman John A. Blatnik slipped the federal-aid provision into his bill produced a useful effect in dramatizing the situation.

In an editorial a year ago, ENR called for some large-scale thinking on this pollution abatement problem (ENR Mar. 10, 1955, p. 160). The editorial, noting President Eisenhower's separate messages boosting construction in the two very important fields of highways and schools, urged similar attention to the water pollution problem, and suggested "relatively modest" federal financial aid.

Congressman Blatnik's billion-dollar proposal involves more federal aid than was reckoned for, but it certainly hasn't lacked for magic to stir some thinking on the basic problem, which is a lag in sewage works construction behind the needs of cities and industries.

The arguments voiced at hearings on the bill (ENR Mar. 22, p. 25) were not nearly so startling as the bill itself. They brought out some important objections to the bill as written, but while the bill itself is a radical departure from anything previous, no insurmountable objections to its basic idea were proferred. It was argued that federal aid means federal control. Has this been true in the highway field? It was pointed out that federal aid now would reward laggards by helping finance only future construction. This is true of the bill as written; its grants-to-construction provision also would favor the small towns, whereas big cities are the big pollutors. But could not such inequities be ironed out? It was argued that promise of federal aid will slow down the present $400 million-a-year rate of sewage works construction. Would this be so if authorization were followed immediately by appropriation of money?

It is to be hoped that Congressman Blatnik's construction-money provision will not unduly tie up passage of a sound and necessary permanent water pollution control act. His provision as written has too much wrong with it to be right—it is too long on money and too short on logical ways to mete it out. But it is hoped that the thinking this proposal may have stirred on the need for sewage works dollars will not die with it. Sewage works construction can stand a push, and the kind that can come from a reasonable amount of federal encouragement would be very helpful.

Engineering for Cities

PHILADELPHIA'S CIVIL SERVICE COMMISSION is concerned over the amount of engineering work being done for the city by outside consultants (ENR March 8, p. 146). Whether the commission has real cause for concern depends on several factors, which should be revealed by the study it now is making.

An important factor is the amount of engineering work the city is doing at the present time in relation to what it does normally. If there is an abnormal peak, then the city should be employing a considerable amount of outside help. On the other hand, if the city's normal staff of engineers has been depleted by resignations and retirement to the point where the city has to engage outside help for such work because it cannot find the right kind of men to maintain its staff, then there is reason for the Civil Service Commission to be troubled. However, that is a situation that the commission itself might be able to help correct. Presumably it has the power to approve higher pay for engineers in city service, or at least to recommend strongly such increases to the city government.

The commission must recognize that times are abnormal in so far as engineering is concerned. The shortage of engineers and the ability of consultants and industry to attract young engineers by offering salaries beyond the reach of city public-works departments may make it necessary for most cities to farm out an abnormal amount of work to private consultants, just as many state highway departments are doing.

This situation is not without its favorable aspects, even though it may seem to increase the cost of city engineering work temporarily, because it tends to develop a strong and diversified force of private engineering consultants, which this country should always maintain. Also, it shows up the low pay scales that exist in too many municipal engineering departments, and thus may speed up necessary corrections.

In normal times a city should not need to engage consultants for as much work as now may be necessary. It should have an engineering force large enough to handle the city's day-to-day engineering needs and most of its lesser new projects. Basically, there should be enough new work to provide challenging variety for the staff, otherwise the city will not be able to attract the type of men it will need in the years ahead. Special jobs will always require consultants.

Careful weighing of these factors should help the Philadelphia Civil Service Commission to evaluate present conditions in its city's engineering operations.

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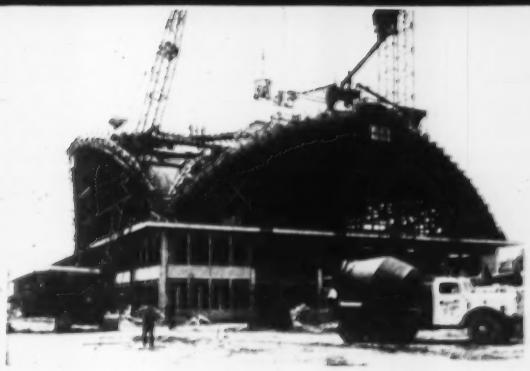

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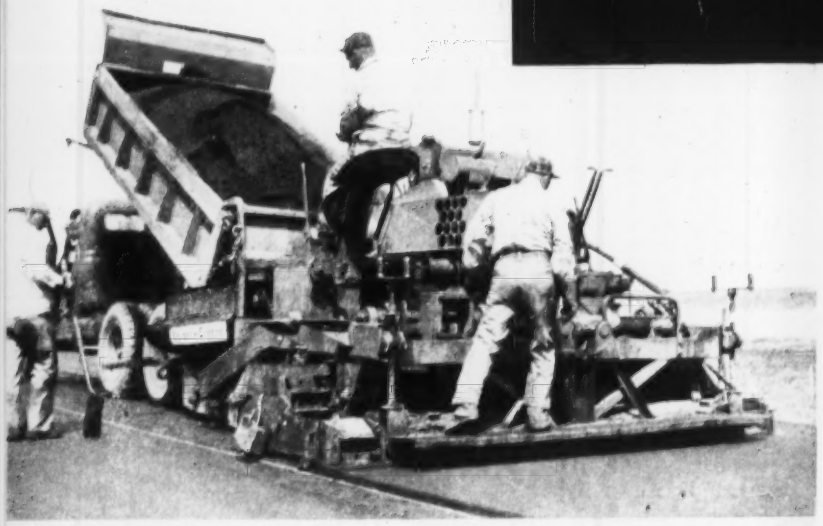

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